FLEET OWNER

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF ALL AUTOMOTIVE FLEETS

Vol. 33 October 1944 No. 4

TECHNOLOGY DEPT

PUBLIC LIBRARY
OCT 31 1944
DETROIT

Over the Andes to Main Street

LIVIAN mines . . . thousands of feet in the Andes Mountains . . . furnish fourth of the world's tin. The transtation problems posed by these all but ccessible "mines in the sky" are tre-, ndous . . . but White Super Power ks go about their business there with the dependable efficiency of Whites ering on Main street.

r Whites in Mexico help to mine lead, per, silver and fluorspar—a vital ingredient in aluminum and aviation gasoline. In Chile, they shuttle over rugged terrain with huge loads of nitrates and copper. To a mine in Nicaragua, accessible by no land transportation but pack mules, a White truck was flown, part by part, and there assembled. In Peru, Whites are commonplace at copper and coal mines. In short, throughout Central and South America . . . wherever the job calls for the utmost in performance and dependability, White trucks are as familiar as in your home town.

A limited number of new Super Power White Trucks are now being produced for essentia services. Your White representative will be glad to help you make application.

E WHITE MOTOR COMPANY • *Cleveland, Ohio, U. S. A.*

White

R MORE THAN 40 YEARS THE GREATEST NAME IN TRUCKS

DO THE JOB RIGHT!

Insure Engine Cleanliness

It's important to clean up the engine when installing rings, but don't stop there. Two of the most important accessories ever added to a motor are the **Air Cleaner** and **Oil Filter.**

Tests made in the Ramco Laboratory show that very little wear occurs in a really clean motor. Follow the procedures for checking and conditioning the Air Cleaner and Oil Filter, and cleaning the Engine as given in the FREE RAMCO SERVICE MANUAL. Do this and install Ramco 10-Up rings . . . which are engineered to compensate for wear without resort to excessive wall wearing pressures . . . do this and you have the ideal combination for lengthening engine life.

For your free copy of the Service Manual, see your Ramco jobber or write Ramsey Accessories Mfg. Corp., 3713 Forest Park Blvd., St. Louis 8, Mo. In Canada, 364 Richmond Street, Toronto. Factories at St. Louis and Fruitport, U. S. A., and Windsor, Canada.

SPIRO-SEAL
BRIDGES THE GAP
. . . Eliminates harsh wear-in pressures.

Copyright 1944 Ramco

RE-POWER with
RAMCO PISTON RINGS 10 up
Specially Designed Heavy Duty Rings for
TRUCKS and FLEETS

GET INTO THE FIGHT! BUY MORE WAR BONDS AND STAMPS

Trained tire men ready to help truck owners through rubber crisis

B. F. Goodrich conservation program gets extra miles out of tires.

HERE'S help in keeping your trucks running. Despite the growing shortage of truck tires, you can keep more trucks on the road by increasing tire mileage through scientific maintenance.

B. F. Goodrich offers you the services of trained tire men. They will take over complete supervision of tire maintenance, assure you of the greatest possible service from every casing. Under this program a B. F. Goodrich tire consultant makes a thorough study of your operation. Among the many things he checks are loading docks, garages and parking areas, for conditions which affect tire life; the vehicles themselves to determine causes of unusual tire wear conditions resulting from mechanical irregularities such as wheel or axle misalignment, improper caster or camber, defective brakes and springs; sizes of loads and load distribution; routes traveled; air compressors, accuracy of air gauges and use of valve caps; matching of duals; the tire record system used, and dozens of other details, all of which affect tire wear.

Regular inspections made

The B. F. Goodrich man makes complete and detailed recommendations. He advises as to when and how tires should be scrapped, repaired or recapped. He checks the operation regularly, works closely with your maintenance men, helps them constantly.

The result is increased tire mileage, a reduction in road delays, improved efficiency, lower maintenance costs and longer equipment life.

Hundreds now saving

So successful has this plan been that many of the country's largest fleets now use the service. Hundreds of truck owners are today saving rubber and money under this program. For example:

A large common carrier saved an estimated 466,000 tire miles through tires recovered from the scrap pile alone.

A hauler reduced road delays to one in 1,356,000 miles.

Mileage of rear tires in a small fleet was increased 15% through correction of irregular wear.

In another fleet tire inflation records showed an increase from 25.6% properly inflated to 98%, resulting in greatly increased mileage.

These are typical of the specific savings and improvements reported by truck owners wherever this plan is used. In every fleet greater tire mileage and efficiency is assured through the proper application of scientific maintenance methods.

Cost is low

The cost of the B. F. Goodrich conservation service is low. Rubber savings begin immediately. If you act quickly, you can get the benefits of this proven program which has been in operation for more than two years. A limited number of trained men are still available to take over additional fleets. For full information wire or phone The B. F. Goodrich Co., at the address below, or send in the coupon.

A few typical users

Here are a few of the fleets now operating under the B. F. Goodrich Tire Conservation Program. Add your name to this list and protect your trucking operation:

Company	No. of Vehicles
Associated Transport, Inc., N. Y. C.	3283
Borden's Farm Products, New York City	791
Cleveland Cartage Co., Cleveland	299
Coca Cola Bottling Co. of Rhode Island	111
General Baking Co., New York City	897
Great Southern Trucking Co., Jacksonville	246
Hayes Freight Lines, Mattoon, Ill.	1200
Kroger Grocery & Baking Co., Cincinnati	1232
Mason & Dixon, Kingsport, Tenn.	393
State of Michigan Highway Dept.	1150
Western Express Co., Cleveland	140

Other names on request. More than 300 companies are now using this service.

In war or peace

B.F.Goodrich

FIRST IN RUBBER

Tire Conservation Dept., Room 103
The B. F. Goodrich Co., Akron, Ohio.

Please give me full information on your fleet tire conservation program.

Company _____

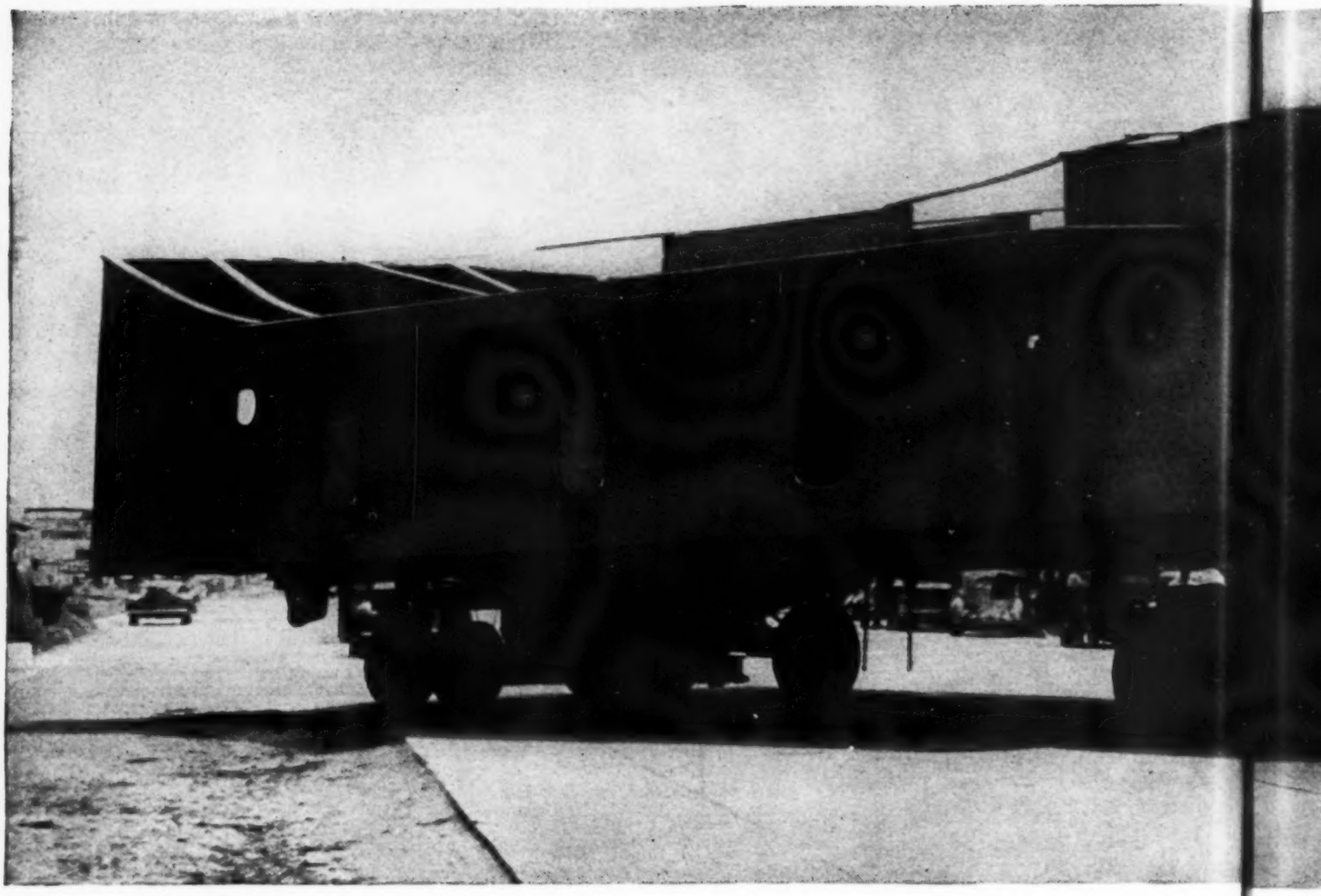
Address _____

_____

Attention of: _____

Number of Running Wheels _____ _____

FLEET OWNER, October, 1944, Vol. 33, No. 4. Published monthly by the Ferguson Publishing Co., 90 West St., New York 6, N. Y. Subscription price $3.00 per year in the United States and Canada. Single copies 35¢. Acceptance under the act of June 5th, 1934, authorized April 24th, 1941.



Shipping
...BY TRUCK

TEXACO

TEXACO

TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT—CBS

HUGE, pre-fabricated ship sections, like the deckhouse in the picture, are transported by truck 35 miles for production-line assembly at a California shipyard. The finished vessels are 175-footers for the Army.

Delivering big loads on schedule demands dependable engine performance. To insure this, fleet operators all over the country lubricate with Texaco.

Texaco D-303 Motor Oil, for example, has the properties of detergency and dispersion. Detergency keeps piston rings and engine parts clean. Dispersion holds deposit-forming materials in suspension until drained at oil-change time. D-303 protects modern bearings and prevents scuffing of rings, pistons, cylinders, etc.

For quieter-running, longer-lasting transmission and differential gears, use Texaco gear lubricants.

So effective have Texaco lubricants proved that they are definitely preferred in many fields, a few of which are listed below.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States. The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

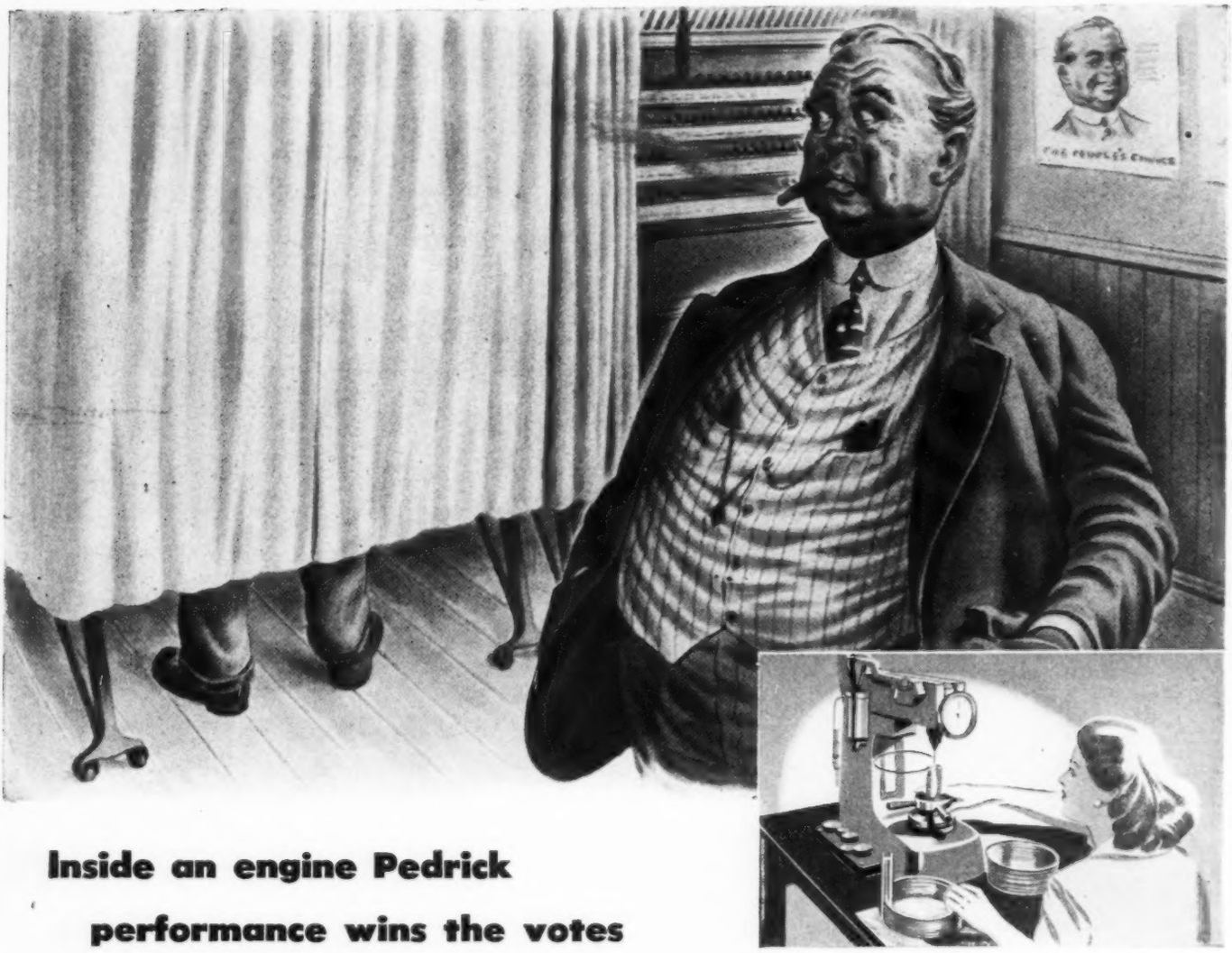
★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

Lubricants and Fuels

FOR THE TRUCKING INDUSTRY

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

It's what goes on **INSIDE** *that counts*



Inside an engine Pedrick performance wins the votes

TRUE SHAPE... absolute flatness...life-long tension... these are the important characteristics in Pedrick piston rings that assure top performance for every job they are elected to do. They mean extra fuel and oil savings, more power, and longer life for each installation.

Pedrick piston rings are so accurately shaped that a light-test shows them to bear evenly against the cylinder wall all the way around. They are so flat that rings 2 inches in diameter can be stacked 6 feet high without wavering. Their life-long tension is accomplished through an exclusive, patented, Heat-Shaping process that fixes exactly the right amount of tension around the entire circumference of the ring.

More and more fleet-operators vote for Pedrick *precisioneered* piston rings. In Engineered Sets for worn, rebored or re-sleeved engines, Pedrick rings cut down shop-time and step-up mileage savings.

WILKENING MANUFACTURING CO., Philadelphia 42, Pa. *In Canada:* Wilkening Manufacturing Co. (Canada), Ltd., Toronto.

SPEND LESS — LEND MORE
BUY WAR BONDS TODAY

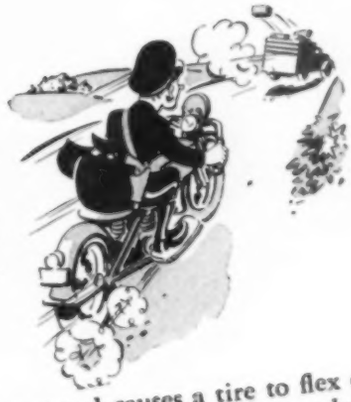
Pedrick

precisioneered **PISTON RINGS**

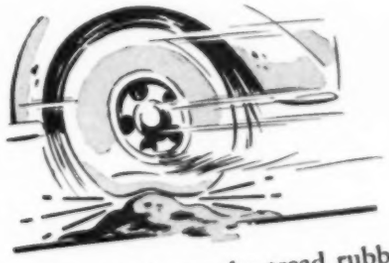
How to Get Extra Mileage Out of Synthetic Truck Tires

Watch Your Speed

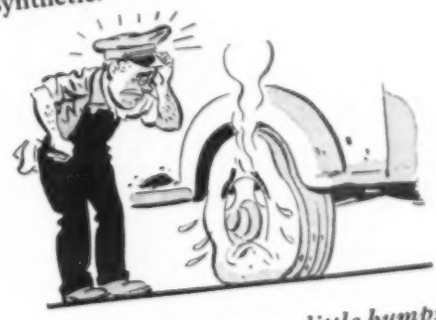
SPEED is one of the very most important factors in the life of truck tires — especially when you're rolling on synthetics. Synthetic truck tires cannot be expected to give full service if you drive them at the speeds natural rubber tires were driven.



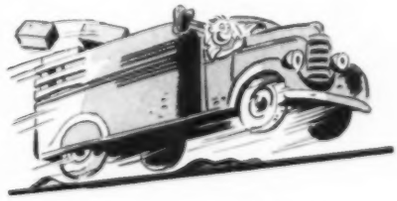
High speed causes a tire to flex excessively — and this produces heat, arch enemy of rubber, especially synthetic.



Heat breaks down the tread rubber — causes it to wear out much quicker. Heat also damages the bond between the plies and weakens the cords, causing blow-outs.



High speeds also change *little bumps* into *damaging blows*, and this often results in a bruise-break.



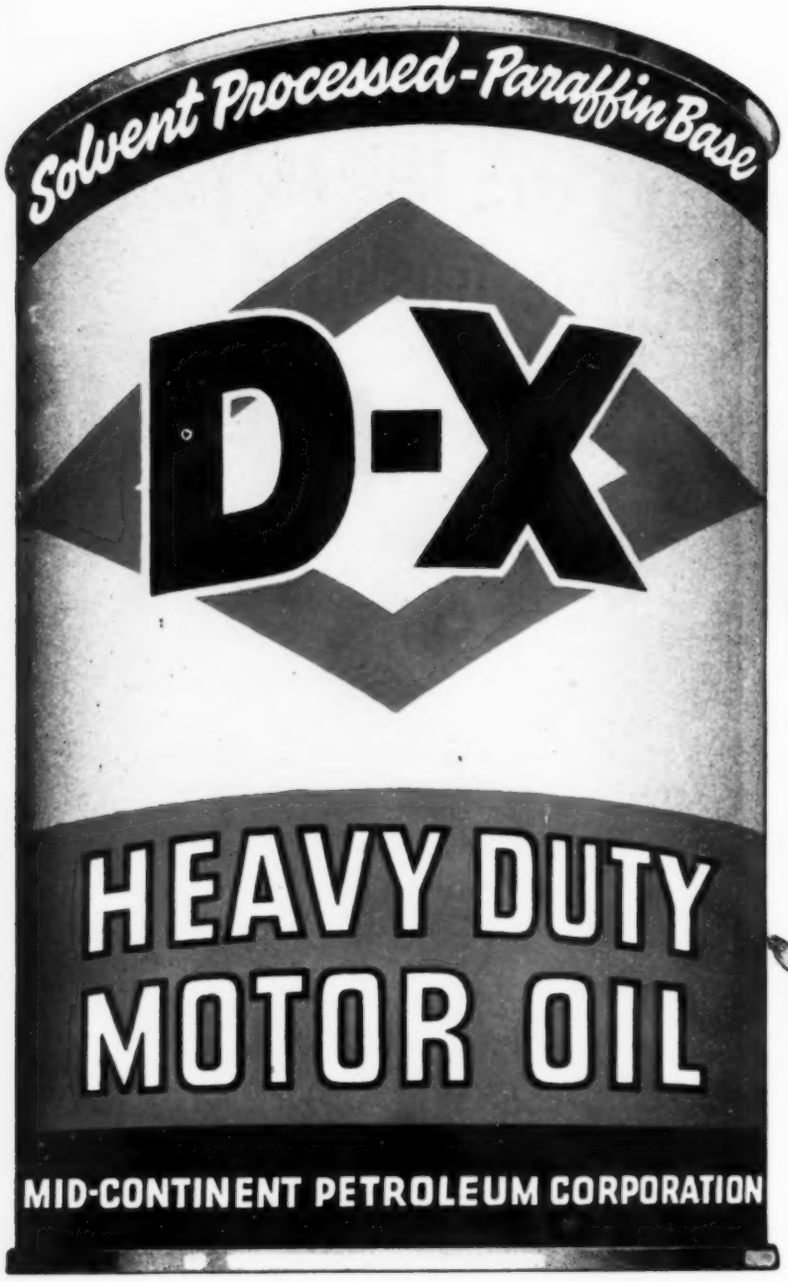
TIP: Drive at Victory Speed. This is a *must* if you want to get all the service out of your synthetic truck tires that was built into them.

FREE—Helps on Tire Care

Write for your free copy of new 24-page illustrated booklet, "How to Prevent Truck Tire Failures." Contains information your maintenance men can use every day. Write Miller Tires, Akron, Ohio, or Los Angeles, California.

MILER

"HEAVY SERVICE" TRUCK TIRES



WHY this New Heavy-Duty MOTOR OIL *keeps engines running...*

CLEANER
SMOOTHER
LONGER!

1. **SOLVENT PROCESSED** ... to provide greater "oiliness" and comparative freedom from compounds that might break down and form sludge, varnish, gum.
2. **DETERGENT** ... prevents initial deposits of sludge-forming products, as soot, carbon, fuel residues, road dirt in *new or clean engines*, exerts dissolving action on old deposits in *used engines*.
3. **Highly DISPERSIVE** ... disintegrates foreign matter and holds the particles in harmless suspension until removed when oil is drained. This characteristic, plus detergency, keeps all engine parts clean... keeps rings and valves free... seals in power.
4. **RESISTANT TO OXIDATION** ... protects the bearings against destructive corrosion.
5. **HEAT AND FRICTION RESISTING** ... retains its lubricating qualities under extreme temperatures and pressures.
6. **SUPERIOR QUALITY** ... refined from carefully selected Mid-Continent paraffin base crudes.
7. **EASIER STARTING** ... flows freely in cold weather, and lowers oil consumption at all times.
8. **For SPECIFIC PURPOSE** ... a super, tested and proved heavy duty motor oil for truck, bus, and other engines operating under severe conditions.

For Light Trucks, Commercial Cars
DIAMOND 760 MOTOR OIL

★

For All Diesel Engines
D-X DIESEL MOTOR OIL

★

See the
D-X PREVENTIVE MAINTENANCE PLAN
A compact, complete and easy-to-use system of Truck Maintenance—ready for your use! Write or Phone Your Nearest D-X Office.

MID-CONTINENT PETROLEUM CORPORATION

Chicago Omaha TULSA Terre Haute Waterloo

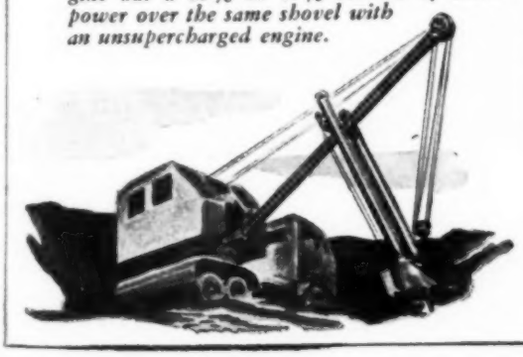
The Riveter's Helper Runs a *Supercharger*

The principle of supercharging has been indispensable to the progress of mankind from the earliest times. The working of metals into useful articles began when means were found to produce high temperatures in a charcoal fire by increasing the rate of delivery of air. The ancients accomplished this by having two or more helpers teeter back and forth on bag blowers. Today, the riveter's helper gets his rivets red hot by turning a centrifugal blower geared to produce a strong blast.

Blowing air under pressure into the cylinders of a diesel, gas, or gasoline engine is another and more advanced application of the basic principle of supercharging. In one case the resulting higher rate of combustion of the fuel produces a hotter fire — in the other it develops more power per piston stroke.

B-W has pioneered in the application of supercharging to internal combustion engines. Our engineers are at your service in designing engines for supercharging as original equipment or for later application.

The power shovel with a supercharged engine has a 25% to 40% reserve of extra power over the same shovel with an unsupercharged engine.



ENGINEERING B-W PRODUCTION

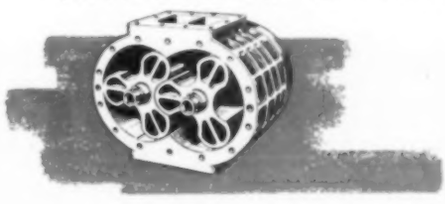
SUPERCHARGERS, INC.

[Formerly McCULLOCH ENGINEERING CORP.]

A DIVISION OF BORG-WARNER

Milwaukee 9, Wisconsin

The B-W Positive Displacement Supercharger is closely sealed and precision-built for efficient and reliable operation.



Keeping Cooling Systems and Radiators at Peak Efficiency

Keeping truck, bus and car radiators and cooling systems clean is a "must". Do this on a regular periodic schedule, and you will find that your radiators will last longer. Engines will run more smoothly. Oil and gas will be saved.

All that is necessary is merely to fill the radiator and system with the recommended solution of

OAKITE PENETRANT

Run the motor for short period, then drain and flush. Inspection will reveal that grease, dirt, loose scale and rust are removed thoroughly and safely.

In instances where heavy insulating deposits of lime scale have been built up in jackets of engine due to hard water conditions . . . or where radiator tubes are clogged . . . use Oakite Compound No. 32 as directed.

WRITE FOR FREE BOOKLET

Gives you helpful data on cleaning radiators, cooling systems, and also for handling other recurring maintenance tasks. Send for your FREE copy today.

OAKITE PRODUCTS, INC., 52G Thames St., NEW YORK 6, N. Y.

Technical Service Representatives in All Principal Cities of the United States and Canada

OAKITE *Specialized* CLEANING

MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT

FLEET OWNER

(Automotive Fleet Headquarters)

Charter CCA Member

Published Monthly in the interests of Automotive Fleet Owners, who do all or part of their own Service, and devoted to the Better Operation and Maintenance of Truck, Trailer, Bus Passenger Car, Taxicab and all Automotive Fleets.

Vol. 33 New York, October, 1944 No. 4

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Published Monthly by

FERGUSON PUBLISHING COMPANY, Inc.

90 West Street, New York 6, N. Y.

(Telephone: COrtlandt 7-1966)

L. W. Perkins, President
Irving E. Hand, Vice-Pres.
A. L. Conley, Sec'y & Treas.
H. Clay Fischer, Editor
Joel Bliss, Eastern Adv. Mgr.

CLEVELAND (22) OFFICE:
3540 Palmerston Rd.,
Tel.—Longacre 2718

CHICAGO (4) OFFICE:
224 South Michigan Ave.,
Tel.—Webster 7502

LOS ANGELES (14) OFFICE:
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NBP ASSOCIATION

Subscription: U. S. & Canada $3.00 Yearly; Single Copies, 35c

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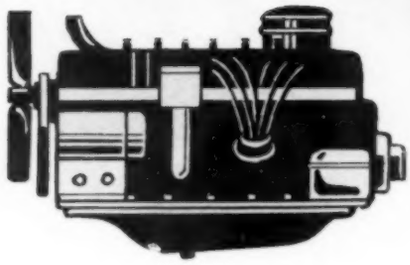
Stanolube HD passes many tests to prove it will keep engines clean



YOU WOULDN'T OPERATE a truck engine for 30,000 miles with no oil change—or deliberately keep intake air and water temperatures excessively high—or overload an engine during the run-in period. Yet, these are some of the "features" of the tests designed to qualify and evaluate heavy-duty engine oils.

These tests, described at the right, are far more severe than any service you will require of an oil. Yet, Stanolube HD rates far above average in all of them. In fact, no motor oil consistently rates as high as Stanolube HD in *all* qualities which a heavy-duty oil *must* have.

To find out what this means in reduced carbon, varnish, and engine deposits—fewer overhauls and lower maintenance—let a Standard Oil Automotive Engineer help put Stanolube HD to work in your fleet. Call your nearest local Standard Oil Company (Indiana) office, or write 910 South Michigan Avenue, Chicago 80, Illinois, for the Engineer nearest you. In Nebraska, write Standard Oil Company of Nebraska at Omaha 2.

Recognized tests of Heavy-Duty oil

1. 500-Hour Endurance Test—determines the ability of an oil to eliminate ring sticking, piston skirt deposits, port fouling, and bearing corrosion. This 500-hour test is equivalent to operating a truck under a *full load* for 30,000 miles.

2. 480-Hour Detergency Test—determines the ability of an oil to reduce wear, deposit accumulation, and ring sticking under long-time service conditions.

3. "Scratch" Test—measures the load carrying quality of an oil under run-in conditions and heavy loads.

4. "Hot-Box" Test—measures the protection an oil gives against bearing corrosion and deposits under conditions designed to increase deposit formation.

5. 36-Hour Accelerated Stability and Bearing Corrosion Test evaluates these characteristics of an oil in a gasoline engine under severe overloads at high temperatures.

heat-proofed
Stanolube HD

Gasoline Powers the Attack . . . Don't Waste a Drop!

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

★ FLEET CONSERVATION SERVICE

FOR A FABRIC THAT DELIVERS THE GOODS – *DEMAND*

REEVES ARMY TWILL

"FROM COTTON TO CUTTER"

The country's leading bottlers specify *invasion tested* Reeves Army Twill. Whatever the industry, if uniforms are needed, this top-quality fabric tailors smartly and gives superb service. Over 80 million yards of it have already been used to help equip America's fighting men, and it is proving itself under the toughest climatic and combat conditions of global war. This fabric, Sanforized Shrunk* and color-fast to sun, water and perspiration, will meet *your* post-war uniform needs. When the time comes to order them, choose from a wide range of popular colors — for long-lasting good looks insist on Reeves Army Twill.

*Residual shrinkage less than 1%

THE REEVES FABRIC GROUP INCLUDES: *Reeves Army Twill • Glengarrie Poplin • Reeveking Gabardine • Byrd Cloth • Marine Herringbone • Mountain Cloth • Warrior Twill*

SPINNING WEAVING DYEING FINISHING Reeves FABRIC

Mills Mill, Greenville, S. C. and Woodruff, S. C.
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REEVES BROTHERS, INC.

54 WORTH STREET • NEW YORK 13, N. Y.

Representatives in Atlanta • Boston • Chicago • Dallas • Los Angeles • Philadelphia • St. Louis • Montreal • Toronto

It takes teamwork
to keep trucks rolling today

These days every truck is at the mercy of its tires.

That's why so many operators are using Fisk Mileage Service. It saves tires—helps to keep trucks on the job right through the tire shortage.

There's nothing complicated about Fisk Mileage Service. *But your tires get the practical, experienced care that only truck tire experts can give them.*

That means your tires stay in service and your trucks stay in service longer. That means you have fewer road delays, that more loads can be delivered in the same length of time. That means you save money by cutting your operating expenses.

Put Fisk Mileage Service on your tire conservation job. Call in your Fisk Truck Tire Distributor today.

FOR FISK MILEAGE SERVICE CALL YOUR FISK TRUCK TIRE DISTRIBUTOR

FISK TIRE
MILEAGE SERVICE

1 Increases tire mileage **2** Catches tire trouble before it happens
3 Cuts operating costs **4** Provides accurate tire service records
5 Supports applications for new tires

FISK TIRE COMPANY—Division of United States Rubber Company, Chicopee Falls, Mass.

OR—

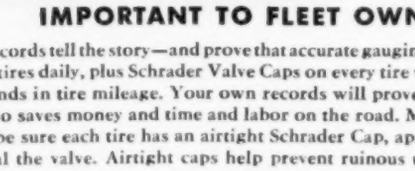
THIS?

← *This Seals the Air!*

All Standard Schrader Valve Caps in use today contain the specially designed sealing unit with a dome-shaped rubber washer vulcanized between two dome-shaped BRASS plates. Because of their unique construction, these caps are guaranteed airtight up to 250 lbs. pressure. This mighty midget does the work.

IMPORTANT TO FLEET OWNERS

Records tell the story—and prove that accurate gauging and inflation of tires daily, plus Schrader Valve Caps on every tire valve, pay dividends in tire mileage. Your own records will prove this program also saves money and time and labor on the road. Most important—be sure each tire has an airtight Schrader Cap, applied firmly to seal the valve. Airtight caps help prevent ruinous underinflation.



Schrader
CONTROLS THE AIR

What would you do if your tires wore out and you couldn't get replacements—Use oxen? Certainly not! But they would be better than nothing. So, with new tires for all admittedly remote, why not take care of your present ones? Isn't that just good sense?

What single factor ruins most tires? Underinflation. It breaks down side walls and causes a serious loss of tire mileage. Yet underinflation can easily be prevented.

What to do about it? Take air-pressure reading with an accurate gauge. Put air in when needed and seal that air in at the valve mouth with an airtight Schrader Valve Cap. Be sure there's a Schrader Cap, screwed down fingertight on every tire, including the spare.

Uncle Sam, too, realizing the importance of Standard Caps is using them on *all* pneumatic tired vehicles at home and abroad. So take care of those you have. Be sure they're on tight. And if your dealer is temporarily out of Schrader Caps, don't blame him. Try again later.

ORIGINATORS OF THE COMPARATIVE AIR LOSS SYSTEM

CAPS are vital for TIRE CONSERVATION

A. SCHRADER'S SON, *Division of Scovill Manufacturing Company, Incorporated*, BROOKLYN, NEW YORK

"CUTS MOTOR WEAR 'WAY DOWN!"

Writes Kansas City bus operator

FRAM Saves Motors, Parts, Overhauls!

Mister, we're not just making vague claims when we say that Fram filters save motors, parts, overhauls, dollars and delays! We're giving you straight facts as proven by reports from fleet operators the country over. "200,000 miles before reboring!" says one big transportation company. And a West Coast operator reports, "Wear found to be 3 and 4 times less on motors equipped with Fram filters." Letters like these are proof of how big, heavy-duty Fram filters cut motor trouble and keep fleets on the road. SO . . .

➡ IF YOUR FLEET HAS FILTERS

—get Fram Replacement Cartridges to step up performance. Genuine Fram Chemically-Treated Replacement Cartridges keep oil physically and visibly clean by filtering out dust, dirt, carbon and sludge, while the exclusive Fram chemical treatment impedes the formation of harmful acids and corrosives that eat away motor parts.

➡ IF YOUR FLEET HAS NO FILTERS

—install big, rugged Fram Oil and Motor Cleaners. Here's the iron-clad Fram Guarantee: Install Fram filters on your fleet and operate for 90 days. Then, if you're not convinced that Fram filters save their cost many times over, we'll gladly refund your money. Fair enough? Then get the complete Fram story from your jobber today.

FRAM CORPORATION, Providence 16, R. I.
In Canada: J. C. Adams Co., Ltd., Toronto

FRAM
Oil and Motor Cleaner

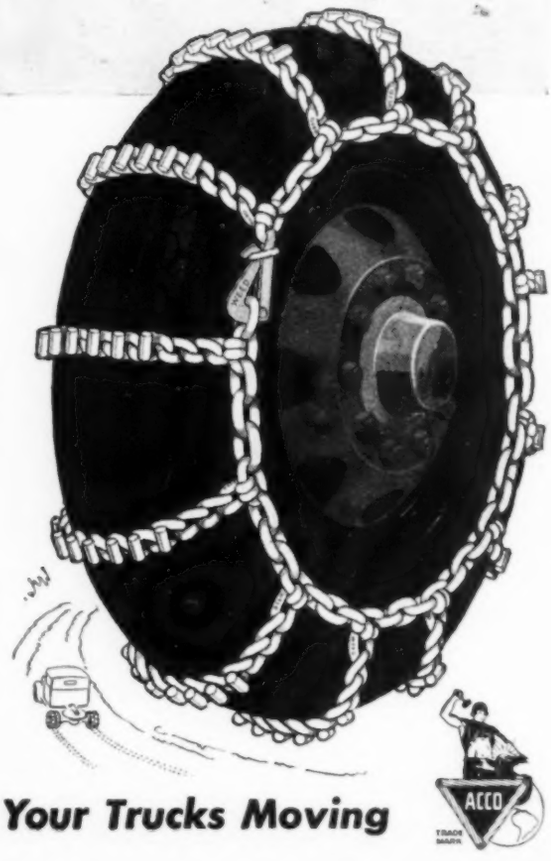
DANGER

BAD SKIDS AHEAD!

All hold-over tire chains should be inspected immediately.

Repair those that are usable, and order necessary new Weed Chains at once from your Weed Chain distributor. It may be too late if you wait for the first snow and ice because tire chains for commercial use are still being manufactured under WPB Limitation Order No. L-201.

Protect your own vehicles by attending to their tire chains right away. For the best buy in tire chains, order Weed American Bar-Reinforced. The reinforcing bars—bridges of steel—insure more traction, greater safety, longer mileage. Made by American Chain Division of American Chain & Cable. "In Business for Your Safety."



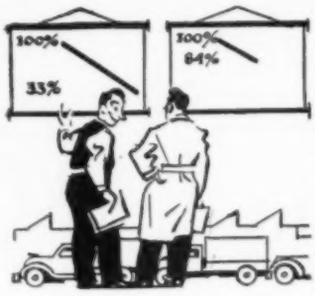
GET WEED CHAINS EARLY

Keep Your Trucks Moving

Facts and Flashes

From the
ETHYL CORPORATION
Chrysler Building, N.Y.C.

A TWO-WAY RADIO TELEPHONE SYSTEM FOR TAXICABS is being planned in a mid-western city subject to approval by the FCC. Immediate contact with any cab at any place in the city will reduce cruising mileage and eliminate unattended call boxes. Railroad and utility companies already are keeping in touch with their rolling stock by means of two-way radios.



IDEAL TREATMENT OF SYNTHETIC TIRES would be to use them in such a manner that they could be retreaded three or four times. Preventive maintenance designed to favor and coddle them would do this. If the operator does not overload, does not overspeed and uses proper air pressures, best results will be obtained even from tires made almost entirely of synthetic rubber. Tests show that 30% overload cuts rating of carcass durability from 100 to 33, and rating for tread wear from 100 to 84. Ideal set-up for the fleet operator would be to hire an experienced "tire man" who would do nothing but get the most out of the rubber available to the company.

REPAIR, REBUILDING AND SALVAGE OPERATIONS are being carried on in the automotive field by Army Ordnance at ten shops located throughout the country. The use of rebuilt and repaired vehicles from many fields of action augments the supply of military vehicles for the Army. Seven salvage segregation centers on the East, South and West coasts receive scrap material as it is returned to this country. A great deal of reclaimable material is kept overseas and used there. Almost 70,000 trucks and heavier vehicles are being rebuilt yearly.

5 to 10% GREATER GASOLINE MILEAGE in bombers has been made possible by a recently developed gadget called a "magnetic-coupled torquemeter." This instrument enables a bomber pilot to determine the power output of his engines 10 to 15 times more accurately than with the method now commonly used. With this precise information, it is easy to adjust the engines to get maximum fuel economy.

AMERICAN TRUCKS PROVIDE 50% OF RUSSIAN ARMY TRANSPORT. This American rolling stock has been largely responsible for the success of the great Soviet offensive on the Eastern front.

BUS RIDING HAS DOUBLED over the past three years—from four billion passengers in 1940 to eight billion in 1943.

Late Flash

THIRTY HORSEPOWER FOR EVERY MAN IN THE ARMED FORCES is represented in the 220,000 aircraft engines delivered by the automotive industry. This equals the combined generating capacity of 84 Boulder Dams and 56 Grand Coulee Dams. In World War II the men of a U. S. Infantry Division have 400,000 horsepower at their disposal. This is 12,400% increase over the 3200 horsepower of a World War I division.

"This is Where Nuts Shake Loose,"

say over a thousand fleet operators

1. Universal Joints and drive shaft flanges	59.4%	7. Wheels	36.2%
2. Rear axle flanges	56.5	8. Backing Plate to Axles	23.0
3. Spring clips	54.3	9. Clutch and brake	13.7
4. Bumpers	49.5		
5. Body Bolts	45.0		
6. Engine supports	39.0		

and 52 other parts of the truck assembly, as well as 24 places in supplementary equipment.

1,160 Fleet Supervisors put their finger on the LOOSE NUT MENACE!

Loose nut trouble after the war?

"Not for us," say over a thousand fleet supervisors in a recent survey,* "we know where it occurs and we know how to stop it!"

They named more than 60 trouble centers where loose nuts cause breakdowns, time losses and expense. Three out of five named universal joints and drive shaft flanges as worst offenders.

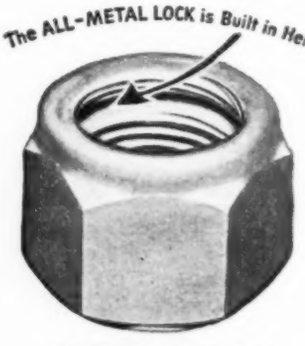
Recently, the Boots Nut was tested on these trouble-making points. Twelve consecutive months of hard-driving wear and tear couldn't shake the Boots Nut loose from a single one of these vibration spots.

This is big news to all automotive executives to whom long life and high use factors are vital.

When 3 out of 4 operators of every type of commercial vehicle, including trucks, trailers, taxicabs and buses, call for a "good, all-metal, one-piece nut, which vibration can't loosen"... they're calling for Boots!

The all-metal Boots Nut with the built-in lock holds with a grip of steel . . . can't shake loose. Easily removed with an ordinary wrench. Can be used over and over again without accelerated locking loss. It's unaffected by oil, gasoline, water, chemicals, heat, cold.

Just now, *all* Boots are devoted to war plane production. But since it won't require any change in automotive design, Boots locked-in security can be expected on your very first post-war models.



***OPERATORS OF 110,000 MOTOR VEHICLES**

indicated in this survey that if a vibration-proof nut like the above were standard on their post-war equipment, tens of thousands of dollars for maintenance and repairs would be saved.

Motion Picture—"All Work And No Play"—16 mm. sound—30 minutes. Write for information

BOOTS *SELF-LOCKING NUTS*

"There's No Excuse for a Nut Shaking Loose"

Boots Aircraft Nut Corporation, General Offices, New Canaan, Conn., Dept. A-20

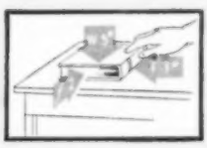
Representatives in New York • Chicago • Detroit • Indianapolis • Los Angeles • Kansas City • Dallas • Toronto • Montreal • Vancouver

Back of every Velvetouch Installation . . .

Behind each Velvetouch clutch facing and brake lining are years of leadership in developing powdered metal friction materials . . . plus the facilities of a well equipped laboratory devoted exclusively to the study of pairs of *rubbing surfaces.* Modern science and engineering skill can produce no finer friction materials than Velvetouch for clutch and brake replacements in heavy duty buses and trucks.

THE S. K. WELLMAN COMPANY
1374 EAST 51st STREET • CLEVELAND 3, OHIO

Interesting facts about *Friction*



The coefficient of friction (*f*) of a book sliding across a table top is easily determined by dividing the force required to move the book (F) by the weight of the book (W).

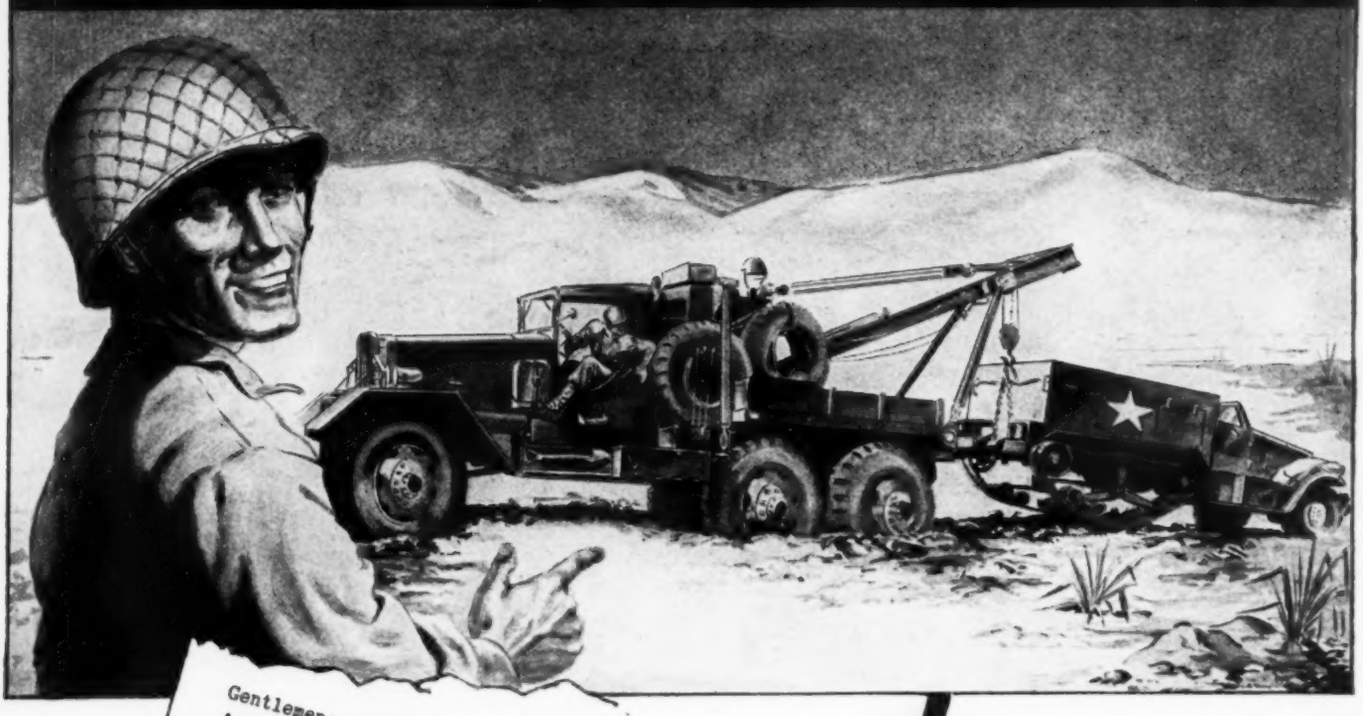
Because many factors affect the coefficient of friction, i. e. speed, pressure, temperature, etc., it is impossible for any material to have a uniform coefficient of friction under all operating conditions.

The powdered metals in Velvetouch are combined in a wide variety of "mixes" to give the best possible coefficients of friction for each installation.

Velvetouch is *all metal*—a combination of powdered metals, compressed, sintered and welded to a solid steel backing.

For Brake and Clutch . . . Use Velvetouch

THAT'S MY POSTWAR TRUCK



Gentlemen:

An American Army officer told me of the hard knocks and strains encountered daily by some of your heavy equipment, in hauling over trails impossible to negotiate with some of the regular Army models supplied by one of your well-known competitors, and aroused my curiosity to the point of writing for literature about Ward LaFrance non-military vehicles.

I would especially like illustrations or specifications concerning your heavy-duty gasoline and Diesel powered commercial models used in over-the-road transportation operations. Any information you may care to mail me would be gratefully appreciated and I can assure you it will pass into hands that may be vitally interested in Ward LaFrance as a possible solution in trucking problems.

Very truly yours

Instructor, Operation
Heavy Transportation Equipment

This letter is typical of numerous unsolicited commendations, received from men who know trucks and who have seen Ward LaFrance military models at work at the fighting fronts.

We have been authorized to resume the manufacture of a limited number of civilian trucks during 1944, but, of course, military demands for Ward LaFrance trucks come first. When Ward LaFrance civilian models do become available, they will offer an unusual opportunity to standardize on trucks known the world over for *extra* stamina and dependability . . . on a unique plan which no fleet owner will want to overlook. For further details, write our Sales Department today.

WARD LAFRANCE

TRUCK DIVISION

GREAT AMERICAN INDUSTRIES, INC. • ELMIRA, NEW YORK

A "LAZY" OIL DID THIS!

. . . keep your engines on the "go" with hard-working TALPEX

THE "SOFTER," heavily leaded bearings encountered today mean oil has a bigger-than-ever job to do.

It's no job for a "lazy" oil. That's what happened to the badly corroded bearing you see above . . . it was lubricated by a "lazy" oil . . . an oil that didn't have *all* of the properties necessary to efficient engine operation.

Guard against this happening to your engines. Use new Shell Talpex . . . the hard-working oil that has *all* the properties needed to operate an engine with utmost efficiency.

NEW SHELL TALPEX

Is Non-Corrosive to alloy bearings. Protects *all* lubricated engine parts against corrosion.

Has Exceptional Oxidation Stability. Holds to a minimum the formation of sludge, lacquer and other deterioration particles.

Has High Detergency. Helps keep carbon lacquer and foreign particles from adhering to pistons and rings, valves, ports.

Has Low Carbon-Forming Tendencies. Reduces ring sticking and wear. Lengthens engine life.

If the oil you now use does not have *all* these properties it's a "lazy" oil . . . should be changed to hard-working Shell Talpex. Ask the Shell man to show you why.

SHELL

TALPEX

THE NEW, ALL-PURPOSE, HEAVY-DUTY LUBRICANT
r trucks, busses, tractors, shovels, stationary and marine Diesels

Sold for TRUCK and

Multi-Ply Cover . . .
Much Longer Wearing Than on Passenger Car Belts

30% Stronger Cords
Than Used in Passenger Car Belts

***Special* Heavy-Duty Compound**

"80% LONGER LIFE"

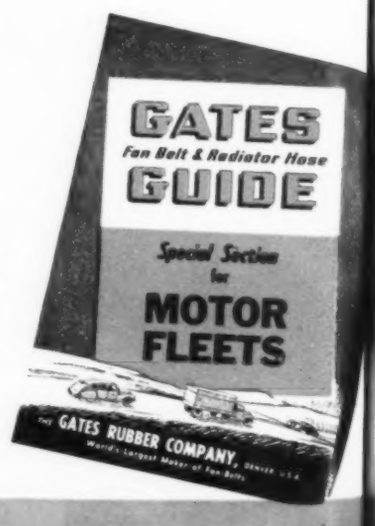
CHICAGO, Ill.
"On our more than 200 units in cross country service your special TRUCK belt operates air conditioning equipment in addition to the extra heavy belt load due to rear engine drives. We are getting 80% longer wear than any other belt has ever given in this unusually tough service."
All American Bus Lines
H. Weinstein, Gen'l. Pur. Agt.

Get This

Valuable *HAND-BOOK*
(Limited Edition) **FREE**

For more than 25 years, this Gates "FAN BELT and RADIATOR HOSE GUIDE" has been the belt and hose "bible" of virtually the entire Automotive Industry. In this new 1944-5 Edition a special section is devoted exclusively to the needs of Motor Fleets. It tells you everything you need to know about Belt and Hose sizes, specifications, interchangeability, etc. Due to the national paper shortage, this edition is severely limited.

Write for your copy TODAY!



The Gates Rubber Company
Denver (17) Colorado

I would like to have a copy of the "Gates Fan Belt and Radiator Hose Guide" which you will send without cost or obligation to me.

Firm Name .....

Address ..... Zone .....

City ..... State .....

"FAR SUPERIOR"

MILWAUKEE, Wis.
"Your specially engineered TRUCK belt is now in use on our entire fleet. It is far superior to any belt we have ever used."
Advance Express Co.
Dave Winters

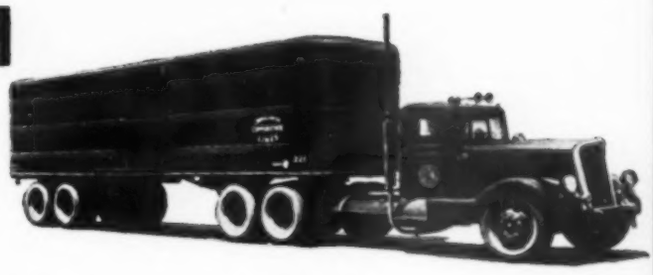
WELLSBORO, Pa.
"Since using your special TRUCK belts we haven't had a single road failure. They often last twice as long as other belts. We can count with safety on at least 50% longer life."
H. W. Taynton Trucking
Robert Taynton

"WEARS TWICE AS LONG"

K and BUS Use ONLY!

You Need *Special* STRENGTH in a Truck BELT

Just as much as in a Truck TIRE!



No operator would even think of using a passenger car tire on a truck. Naturally not, because the loads are heavier, the service tougher. A bigger, stronger, more rugged tire is needed.

The moment you think of it you realize, of course, that exactly the same facts apply to belts.

A typical passenger car belt, for example, carries a 3.8 horsepower load. The belt on a regular truck must transmit 13 horsepower to turn the fan, pump and generator. And this is not all of the story. Trucks and Buses often use additional belt driven equipment. There may be vacuum pumps, compressors, airconditioning units and so forth.

On top of all, trucks and buses run longer hours—often 24 hours a day. They must change speeds as many as 600 times a day with rapid acceleration, abrupt deceleration, stops, starts and idling—all of which put a strain on truck and bus belts far greater than a passenger car belt ever has to stand.

Is it any wonder that big operators by the hundreds are turning to the one belt that is specially engineered for this extra heavy service—the Gates TRUCK Belt.

Read the letters reproduced on these pages. They tell you how practical, experienced, hard-headed operators are getting 50% to 80% longer belt wear since they began using the Gates TRUCK Belt. More important, they tell you how much valuable operating time they are saving through fewer road failures and fewer delays for servicing.

One thing we ask you to bear in mind. The Gates TRUCK Belt is sold for use on Trucks and Buses only. This is because some of the materials used are allocated for this particular purpose. Please do not use any of these belts on passenger cars. Truck and Bus transportation plays a direct and definite part in our nation's war effort.

If you are interested in keeping your trucks and buses operating most efficiently and economically, call your jobber today and tell him to send you a trial order of Gates TRUCK Belts.

GATES Jobbers NOW Have Stocks to Serve You!

Hundreds of BIG OPERATORS say

"50% to 80% Longer Wear"

LOS ANGELES, Calif.

"BEST EVER USED"

"In our heavy hauling from Arizona across desert and semi-desert regions with the thermometer frequently well over 100 degrees, we can run your Gates TRUCK Belt long after it would have been necessary to replace any other belt we have used."

Consolidated Copperstate Lines
R. C. Hutchison, Shop Supt.

SHREVEPORT, La.

"Your specially engineered TRUCK belt has eliminated fan belt worry. It outlasts any truck belt we ever used before by one-third or more."

Louisiana and North West Transfer Co.
A. H. Semple

"OUTLASTS ANY OTHER BELT"

NEWARK, N. J.

"Really tough service on our milk trucks played havoc with belts until we installed Gates Specially Engineered Truck Belts. We are now using only half as many belts as before—and saving a lot of time previously spent on belt adjustments."

Bloomingdale Dairy Co., Inc.
Edwin R. Fantel, Maint. Supt.

"CUTS COSTS IN HALF"

T444

GATES RUBBER Co.

DENVER, U. S. A.

World's Largest Makers of V-Belts

Mr. Hi-Q Helps Solve a Delivery Dilemma

Mr. Hi-Q: The boys tell me you're having delivery troubles. From what I've heard, I believe I can help you.
Truck Owner: You mean on this bunch of battery failures we've been having lately? They're sure raising hob with my schedules.
Mr. Hi-Q: Tell me, have you ever considered standardizing on your *manufacturer's highest quality batteries?* That's one way you can eliminate a lot of grief and get more deliveries with your present trucks.
Truck Owner: Are these batteries really so much better? Enough so to justify their extra cost?
Mr. Hi-Q: Most folks who use them maintain that they actually *cost less per mile* in the long run. That's because they last longer, stand up better. You see, they're more sturdily made, with stronger plates, better separators and heavier cases. What's more, they're usually equipped with Fiberglas* Retainer Mats.
Truck Owner: I've heard about those mats, but *what do they do?*
Mr. Hi-Q: Standard tests show that they greatly reduce battery failures formerly traceable to shedding of power-producing material from the positive plates.
Truck Owner: Just how much do they reduce these failures?
Mr. Hi-Q: Well, tests show that batteries equipped with Fiberglas are lasting up to twice as long as the same batteries without the mats.
Truck Owner: Say, I wouldn't be surprised but what you've got something.
Mr. Hi-Q: There's no question about it. You get some top-of-the-line batteries—Fiberglas equipped, of course—and see how they help your trucks stand up. You'll find your regular battery distributor can supply you.

Owens-Corning Fiberglas Corporation, 1962 Nicholas Bldg., Toledo 1, Ohio. In Canada: Fiberglas Canada Ltd., Oshawa, Ontario.

ARMY E NAVY

YOU CAN'T FIND A BETTER BUY THAN THE BEST BATTERIES— FIBERGLAS-EQUIPPED

FIBERGLAS

*T. M. Reg. U. S. Pat. Off.

BATTERY RETAINER MATS

6 THINGS A TRUCK OR BUS *HAS* TO DO:

LET US TAKE IT FROM HERE DOWN

1 Start
2 Accelerate
3 Run

Performance

4 Decelerate
5 Stop
6 Hold

Safety

Developments in speed, power and efficiency of engine units are only half the problem of bus and truck engineering; the *performance* half. The other half concerns *safety*. And that's *our* business.

Made in four sizes with two or four shoes, **TRU-STOPS** are adaptable to small, medium or large trucks and buses. For specific information, write our Detroit office.

TRU-STOP *Emergency* **BRAKES** are designed to give you more, smoother, safer stops. They are disc-type and operate on the drive shaft. Ventilated, they quickly throw off the intense heat of braking which is so harmful to linings. Even when linings have to be replaced, the job is a simple, inexpensive one.

Dependability—surplus braking power—longer life—lower maintenance cost—these are the advantages of **TRU-STOPS**. They are the advantages that make the truck or bus equipped with **TRU-STOPS** a better investment. They are the safety features that you'll want along with the advanced performance features in new equipment.

Before approving truck or bus specifications—investigate **TRU-STOP** *Emergency* **BRAKES.**

TRU-STOP *Emergency* BRAKES

AUTOMOTIVE AND AIRCRAFT DIVISION

6-235 General Motors Building, Detroit 2 • 695 Bryant Street, San Francisco 7

a *Division of* AMERICAN CHAIN & CABLE COMPANY, INC., Bridgeport, Conn.

ESSENTIAL PRODUCTS • TRU-LAY Aircraft, Automotive, and Industrial Controls • TRU-LOC Aircraft Terminals • AMERICAN CABLE Wire Rope • TRU-STOP Brakes • AMERICAN Chain • WEED Tire Chains • ACCO Malleable Castings • CAMPBELL Cutting Machines • FORD Hoists, Trolleys • HAZARD Wire Rope • MANLEY Auto Service Equipment • MARYLAND Bolts and Nuts • OWEN Springs • PAGE Fence, Shaped Wire, Welding Wire • READING-PRATT & CADY Valves • READING Steel Castings • WRIGHT Hoists, Cranes • WILSON "Rockwell" Hardness Testers

In Business for Your Safety

Give YOUR Trucks this "Mileage Buildup!"
with Dayton Spoke Type Wheels

THIS one will be rolling any minute now, ready to knock out highway mileage and tire mileage that it didn't have before. Multiply this individual advantage by the size of your fleet, and you've got a pretty considerable factor in times like these . . . when terrific volumes of goods must be moved, and replacement problems get tougher. Better check it over!

DAYTONS ADD HIGHWAY MILEAGE two ways. Although stronger, they weigh considerably less, transferring weight from deadweight to payload. Demountable rims add to this by cutting out the weight of an extra wheel . . . and in addition make the tire-changing quicker. This means shorter trip interruptions; less time in the shops for tire switching and rotating.

DAYTONS ADD TIRE MILEAGE because the spoke type construction provides a constant fanning action that concentrates cooling air against tires and brake lining; because greater direct pressure on the clamp bevel prevents rim slippage and uneven wear.

Add it all up and you get this: Daytons help you haul bigger loads faster, farther, safer. Specify them for new equipment and replacements.

THE DAYTON STEEL FOUNDRY CO., Dayton, O.

DAYTON BRAKE DRUMS— Drums assembled to the wheels at the factory give more perfect concentricity.

DAYTON FIFTH WHEELS— Standard equipment on many trailers. Provide quick coupling. Positive operation.

DAYTON LANDING GEARS— Hydraulic and mechanical

Dayton

SPOKE TYPE CAST STEEL WHEELS

Dayton Wheels are available on any of the following: Trucks — Autocar, Federal, International-Harvester, Gramm, Mack, Studebaker and White. Trailers—Fruehauf, Trailmobile, Gramm, Kingham, Edwards and Mono. Buses — Brill, Mack, and Pullman. Specify Dayton Wheels, Brake Drums, Fifth Wheels and Landing Gears for your own trucks, trailers, buses.

★ BUY WAR BONDS AND STAMPS ★

THERE'S SOMETHING ABOUT A McCREARY . . .

FLEET OPERATORS SING McCREARY'S PRAISE!

THOSE FLEET OPERATORS who keep a keen eye on tire costs sing the praise of **McCreary Super Service** and **Super Transport Tires.** They all say, "There's something about McCreary that rolls up more trouble-free miles at less cost per mile."

Of course, there's a definite reason for this performance. The best of materials—superior heat-resisting rayon cord, the finest American-made rubber, processed under the most scientific methods—plus careful handling, without time-saving shortcuts that impair quality, provide **stronger, more durable carcasses.**

Each McCreary Tire is checked, inspected and rechecked more than 40 times in the process of production—more good reasons **why McCreary Tires give more original miles—more recaps per casing—more miles on each recap . . . and cost less.**

McCREARY "Built for Longer Service" TIRES

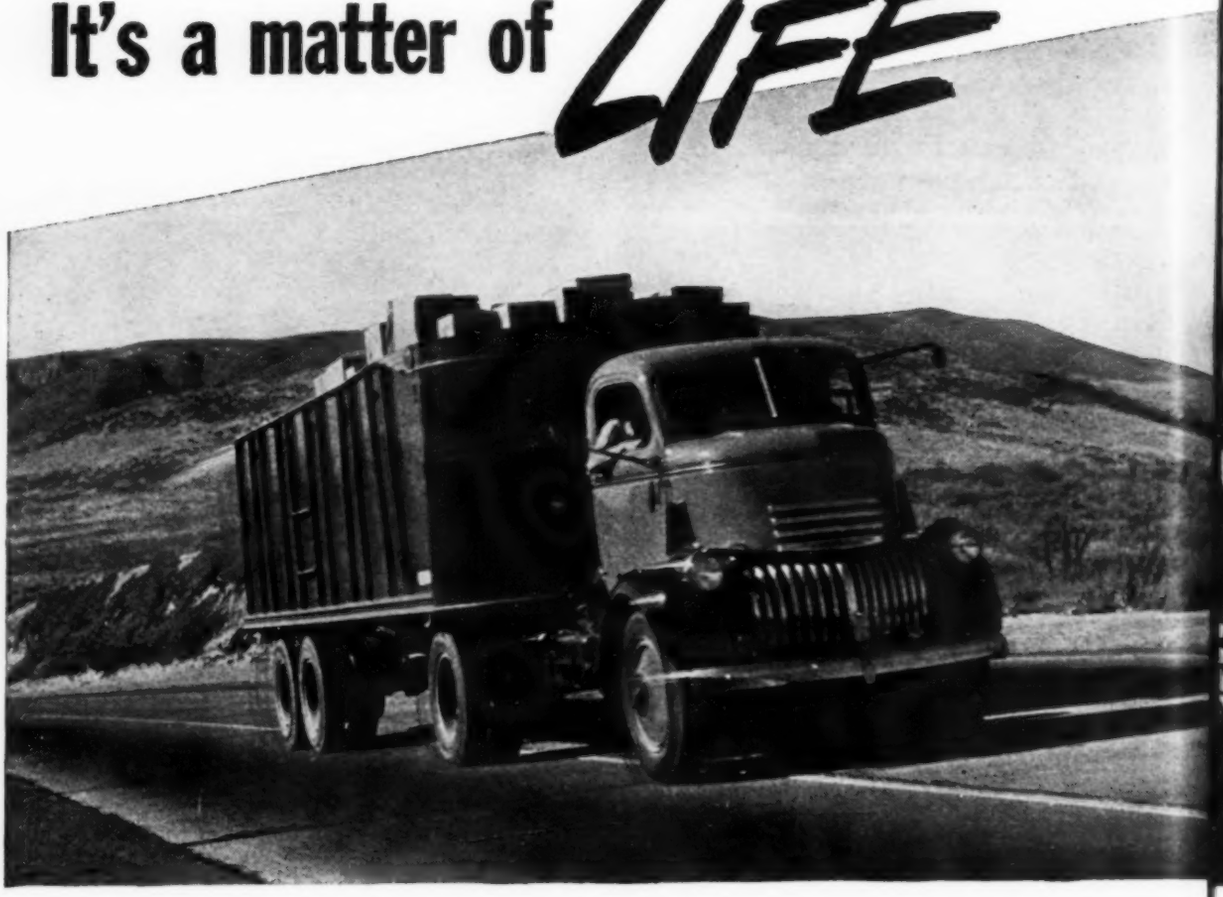
Recaps IN THE POST-WAR ERA

Before the war a good recap job delivered close to new-tire service. But during the war recaps have not always met mileage expectancy. This was due to the fact that the Government for a considerable time could allocate only reclaimed rubber for recapping. However, with improved quality of rubber and the application of new scientific methods, longer-wearing recaps can be expected. Experts predict the volume of post-war recapping to triple the best pre-war years.

WRITE FOR THE NAME OF YOUR NEAREST DEALER

McCREARY TIRE AND RUBBER CO. INDIANA, PENNA.

It's a matter of LIFE



—how your engine oil

Is your present crankcase oil . . .

DETERGENT? A detergent oil helps prevent sludge and gum formations—helps disperse those already present. It also tends to sharply reduce varnish and lacquer deposits on piston skirts.

Veedol 90 H.D. is a Detergent Oil

DISPERSIVE? A dispersive oil holds carbon, soot, and other finely divided particles in suspension—prevents them from "ganging up" in trouble-making masses. This matter is actually drained out with every oil change, leaving the engine almost factory clean.

Veedol 90 H.D. is a Dispersive Oil

CORROSION RESISTANT? A corrosion resistant oil protects the newer alloy bearings from the corrosive attacks of compounds that result from oxidation.

Veedol 90 H.D. is a Corrosion Resistant Oil

MOREOVER—Veedol 90 H.D. is made from 100% PENNSYLVANIA CRUDE. The lubricating and wear-resisting qualities of this crude are acknowledged to be unequalled the world over. Veedol 90 H.D. has these advantages *in addition* to those listed above.

Veedol 90 H.D. comes in S.A.E. 10 to 50. Write us today for prices and delivery information.

TIDE WATER ASSOCIATED OIL COMPANY

New York 4, 17 Battery Place Tulsa 2, Thompson Bldg.

or DEATH

oil answers these questions:

The Famous Veedol P. M. Plan is waiting for you, too!

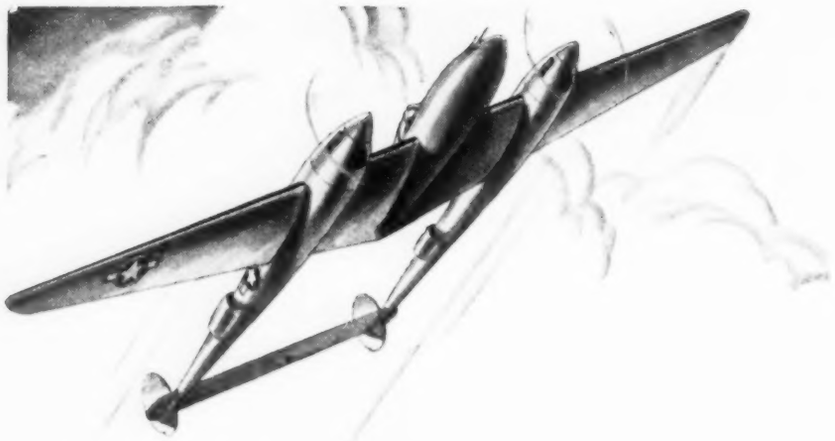
The Veedol Preventive Maintenance Plan is doing a whale of a job for over 800 hard-working fleets. It can help yours. The plan can be tailored to fit any number of units—and costs only 18¢ per truck. Write today for a Tide Water representative to call and go over this *proven* lifeguard for rolling equipment. You can't get started any too soon!

VEEDOL

OILS AND GREASES

VEEDOL MOTOR OIL

GASOLINE POWERS THE ATTACK—DON'T WASTE A DROP! • BUY MORE WAR BONDS



400 miles per hour...

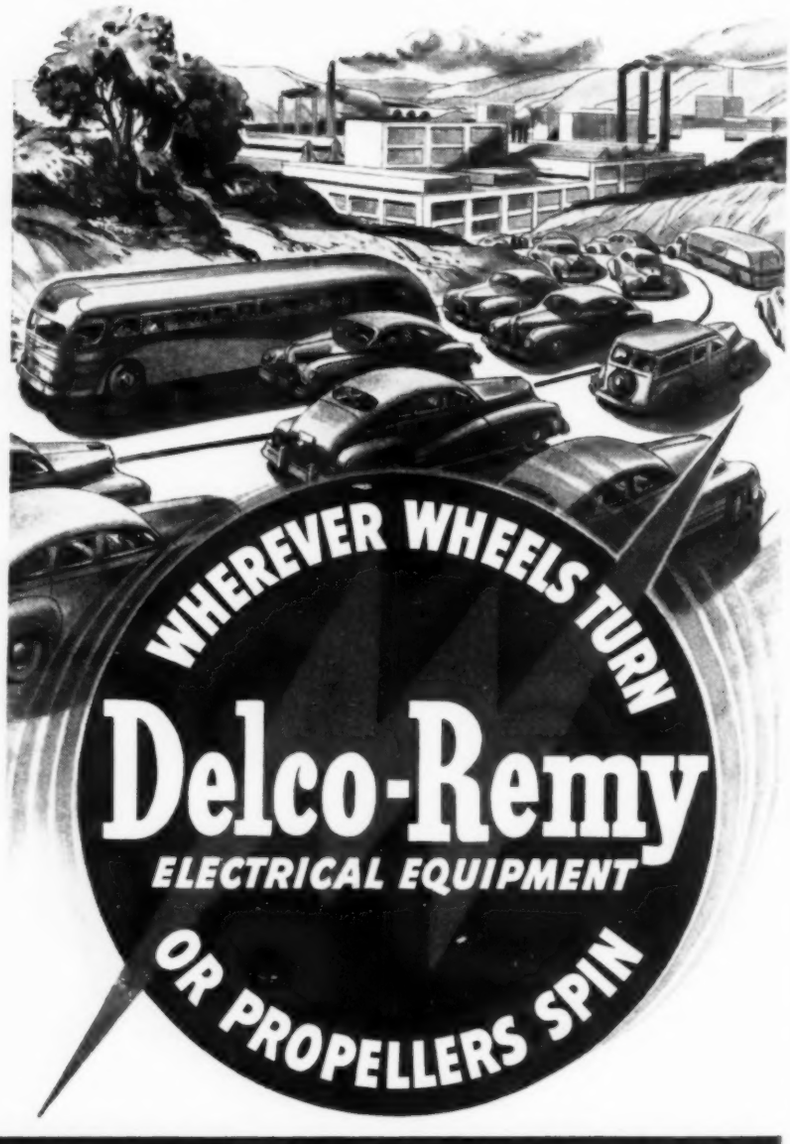
or 35 miles per hour

At an American base in England right now, an Air Forces mechanic is tuning up the new aircraft engines just installed in a fighter plane. There is electrical equipment on those engines that bears a familiar name-plate—Delco-Remy.

In a fleet maintenance department in Hometown, America, another mechanic is making repairs and replacements on a truck in for its periodic inspection. Again the electrical equipment is Delco-Remy.

This scene is being repeated—with variations—throughout the Allied world. Whether the application is a sleek war plane or a war-vital truck, a PT boat or a farm tractor, an Army bulldozer or a civilian car . . . its performance is essential to mechanized warfare or home-front production.

And whether the mechanic on the job is dressed in GI uniform or his own coveralls, he counts on Delco-Remy electrical equipment for the *fundamental dependability* that safeguards his good work.



Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION

UNITED SERVICE MOTORS

Delco-Remy service parts and service information are distributed by United Motors Service through independent automotive wholesalers.

DO MORE THAN BEFORE . . . BUY MORE WAR BONDS

CHAMPION SPARK PLUGS

CENTRAL N. Y. COACH LINES, Inc.

Franchise Omnibus Line

SYRACUSE --- UTICA --- LITTLE FALLS

Harrison S. Sweet, President
Peter Sisti, Vice President
Leo J. Oster, Secretary-Treasurer

UTICA, N. Y.

Champion Spark Plug Co.
Toledo, Ohio

June 12, 1944

Gentlemen:

We operate sixty-five buses on various lines, including intercity, suburban and city transportation. These lines require buses suitable for their particular type of service, so we have several different types of equipment in our service.

Champion Spark Plugs have contributed greatly to the reliability and efficiency of operation, particularly under the heavy stress of increased riding during the past eighteen months. We are pleased with the service your plugs have given and are giving, and their contribution toward the maintenance of bus transportation.

Very truly yours,

CENTRAL N. Y. COACH LINES, INC.

Harrison S. Sweet

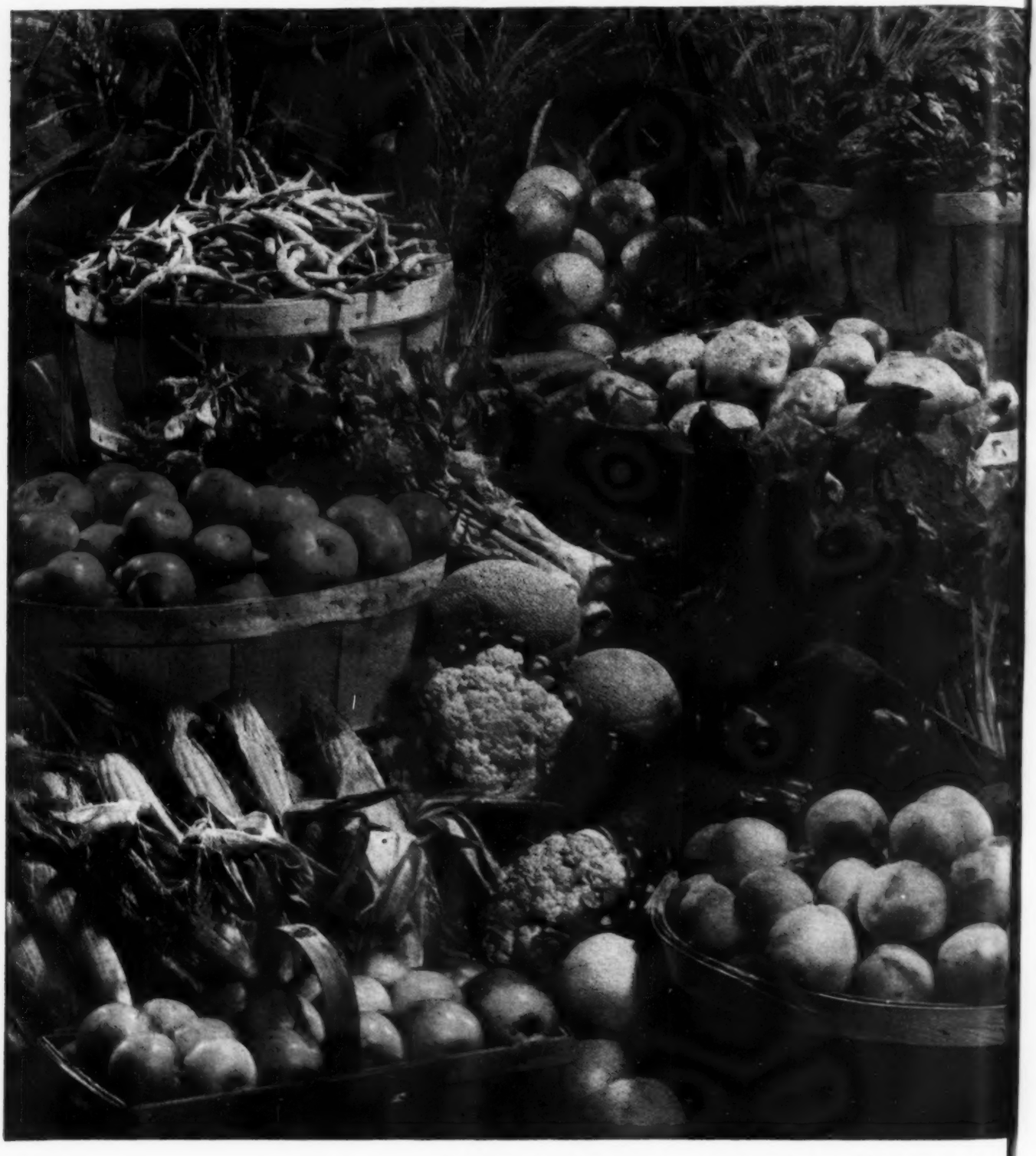
Harrison S. Sweet,
President

HSS:R

Today, as never before, the importance of good, dependable spark plugs to efficient, economical fleet operation is becoming more and more apparent. It's no wonder, therefore, that you'll find the majority of successful fleet operators using dependable Champions. Comparative tests, made by fleet owners themselves, have proved beyond question that Champion Spark Plugs give better, more dependable, more economical performance. Install Champions in your fleet to "Keep 'Em Rolling Longer."

NO JOB TOO BIG—NO WORK TOO TOUGH—for CHAMPIONS

★ ★ ★ ★ ★ ★ ★ ASSOCIATION M



Fall, with its rich abundance is here. Let us, like wise mother nature, plan now that our future may be one of abundance, too.

THE M

Manufacturers of the Foll

MANSFIELD, CENTURY, RI

DISTRIBUTED THRU WHO

MEANS EVERYTHING

IF A TIRE MANUFACTURER is to deliver a truly *better* tire without increasing its price to the truck owner, he must hold a competitive advantage somewhere.

This competitive advantage is held by Mansfield through its long association with America's leading wholesale distributors — a system of tire distribution which is unique in the tire industry.

By reason of this singular advantage — a lower distribution cost — Mansfield can go beyond the common standards of tire quality. Mansfield can deliver thousands of miles of extra, built-in tire quality which are all gain for the truck-fleet tire buyer.

★ ★ ★ ★ ★

When you need tires, call the nearest wholesaler handling a Mansfield line. Perhaps this wholesaler already is supplying you with shop tools, parts, accessories, and other truck maintenance needs. You will find that he is serving other fleet operators and tire dealers right in your territory on a friendly, efficient, low-cost basis. Such association means everything.

THE MANSFIELD TIRE & RUBBER CO. • MANSFIELD, OHIO

Following Well Known Tires—

RICHLAND, UNITED

WHOLESALERS EXCLUSIVELY

Seven League Steps Save Vitally Needed Food Supplies

A transport truck loaded with highly perishable vegetables breaks an axle. It's late at night, but a delay until morning means the spoilage of a precious cargo. A call goes out to a nearby Automotive Wholesaler for Emergency Service. It's after closing hours, but when actual emergencies occur, the Automotive Wholesaler, like the Druggist, is on call! The axle is delivered...the cargo is saved.

"Emergency Service with us is routine", reports the M.E.W.A. Wholesaler who tells this story. "Hardly a Sunday passes, and many are the nights", he says, "that we get emergency calls for parts and supplies from bus and transport companies whose vehicles have broken down on the highways."

For Emergency Service and the indispensable day to day service of parts supply and machine shop service, America is depending upon Automotive Wholesalers...and they have not been found wanting!

★ ★ ★

Remember the story of the Seven League Boots? How they gave the wearer the ability to take steps seven leagues long? Just a story, but it helps to visualize a real life story . . . the tremendous steps which your Automotive Wholesaler takes for you in order that you be provided with what you need, when you need it! This is one of a series depicting how these services have been and are being utilized by Army, Navy, War Industries and the Automotive Service Industry to speed Victory. A BOOKLET DETAILING THE VITAL SERVICES BEING RENDERED TO THE NATION BY THE AUTOMOTIVE WHOLESALER will gladly be sent you upon request to The MOTOR AND EQUIPMENT WHOLESALERS ASSOCIATION, 309 WEST JACKSON BOULEVARD, CHICAGO 6, ILLINOIS.

Copyright 1944, M.E.W.A.

Buy With Confidence Where You See This Insignia!

MOTOR & EQUIPMENT M·E·W·A WHOLESALERS ASSOCIATION

MEWA

Buy More War Bonds

CONSERVE YOUR TRUCKS

Make it all out for Victory—not time out for repairs. Conserve your trucks by frequent checkups. Do your part in backing the attack!

FEDERALS HAVE WON

By Costing Less to Run!

FOR 34 years the Federal Motor Truck Company has manufactured motor trucks exclusively. Designed and constructed by truck specialists, every Federal truck has extra inbuilt strength and extra power to meet the most punishing demands of present day motor transport needs.

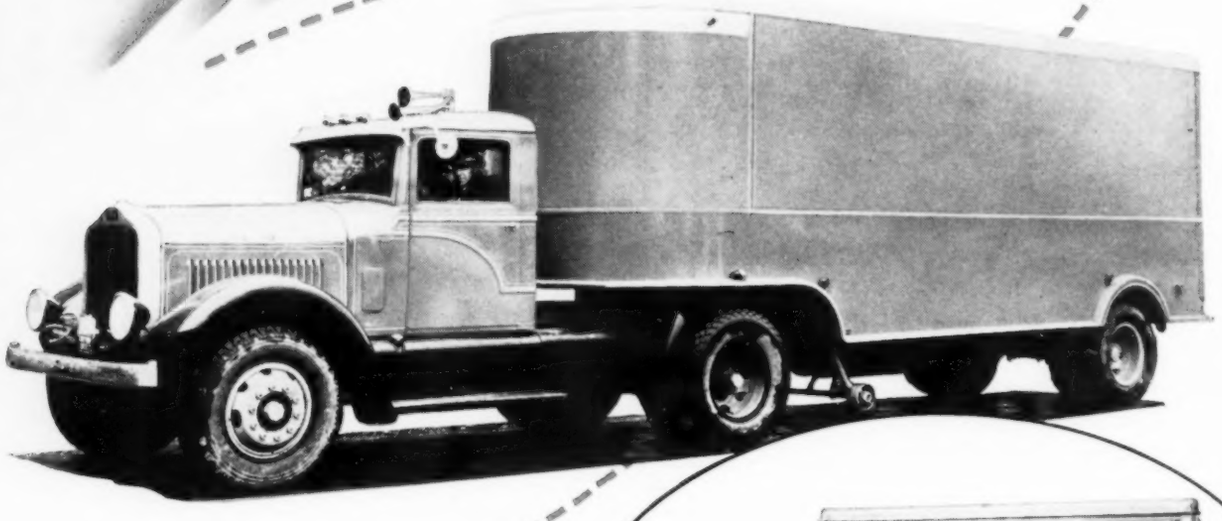
Federal's complete plant facilities, experience and craftsmanship offer many valuable advantages to Federal owners. These broad resources, combined with the highest truck manufacturing standards, are responsible for those qualities of ruggedness, endurance and economy which have earned for Federal a worldwide reputation for longer life, greater dependability and lower operating costs.

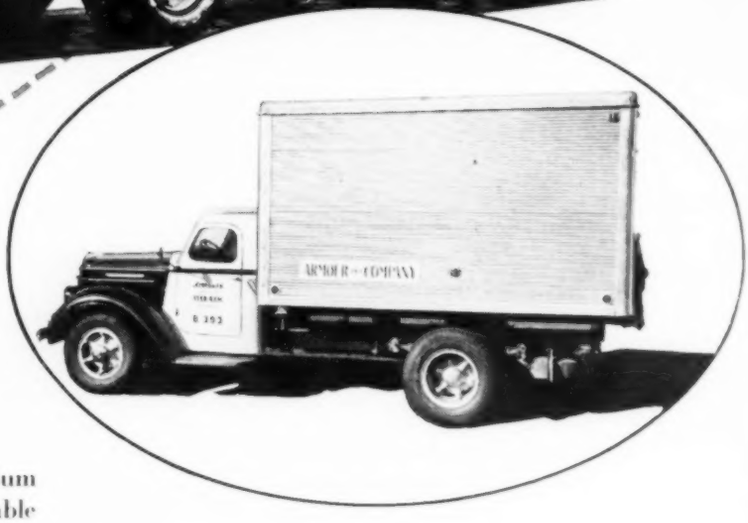
Federal Trucks have established a notable record of performance and owner satisfaction. They again are available in certain models for essential civilian needs.

FEDERAL MOTOR TRUCK COMPANY
DETROIT 9, MICHIGAN

Federal has been cited again by the War Department for meritorious services on the production front.

Aluminum . . .





. . IS AVAILABLE FOR TRUCKS AND TRAILERS

Yes, you can again build lightweight aluminum truck and trailer bodies. And metal is available for reconditioning those prewar jobs that have been worked so hard all during the war. W.P.B. now permits the use of aluminum for these important purposes.

The lighter weight of aluminum bodies means that, for equal loadings on power plants, tires and brakes, trucks and trailers carry more weight. These greater payloads result in fewer trips to deliver an equal amount of goods. You save on manpower, reduce operating expenses, and fewer pieces of equipment are required.

The sturdiness of aluminum construction, coupled with the corrosion-resisting ability of aluminum, means less manpower is needed for upkeep. Its fine appearance is a morale and business builder.

Aluminum sheet for siding, special extruded shapes for body work, are in Alcoa's distributors' stockrooms, ready for your requisition. Perhaps you can't get the large size sheets you're accustomed to working with, but take the smaller sheets. Aluminum bolts and rivets are in stock for assembly work.

Send for the new booklet listing the Alcoa Aluminum sheet, shapes and fittings in stock. Then, you can proceed with that design job. Write ALUMINUM COMPANY OF AMERICA, 2161 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

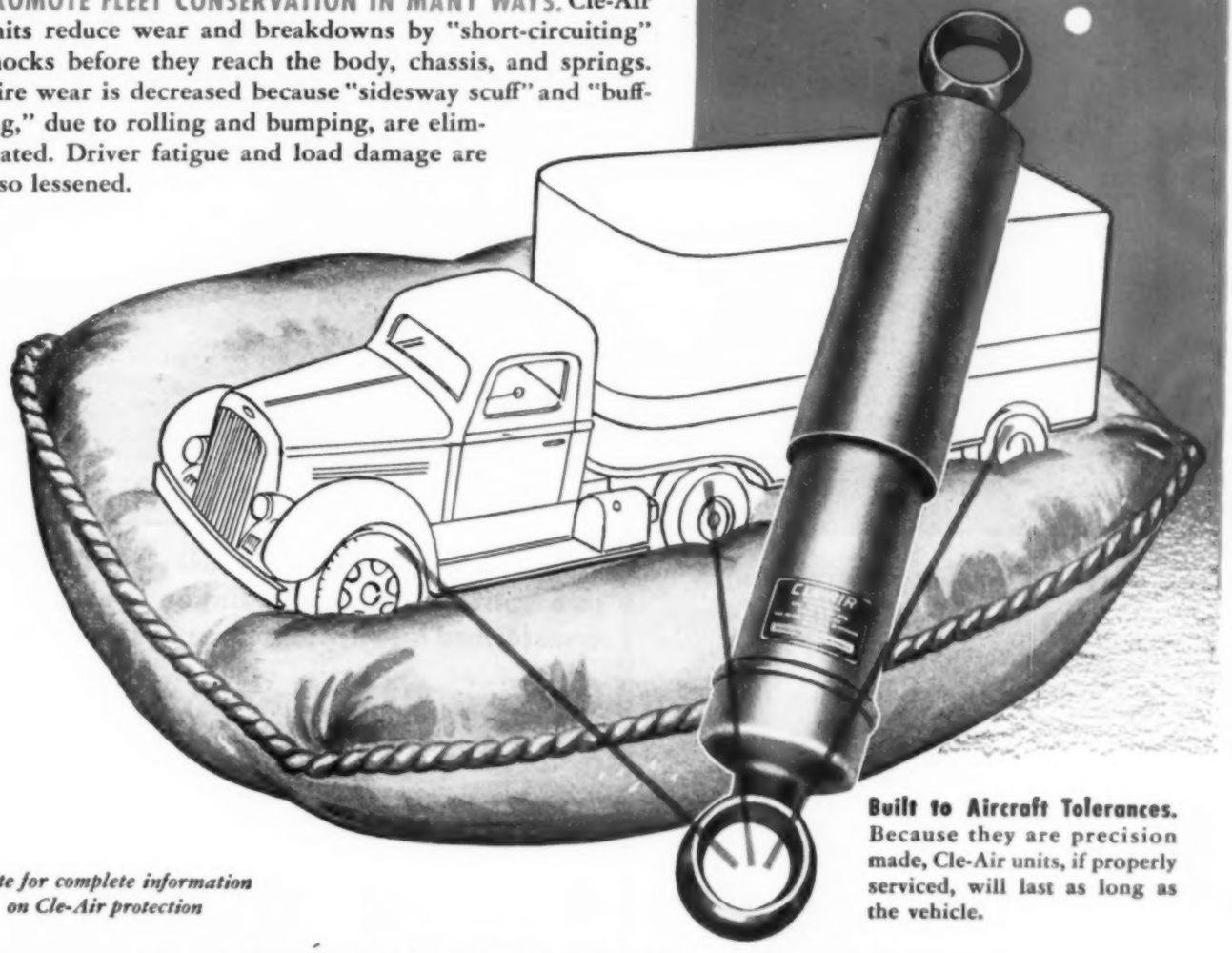
Please mention FLEET OWNER *when writing to advertisers.*

PROTECT YOUR FLEET WITH A *Cushion* OF AIR AND OIL!

DUAL-PROTECTION FROM ROAD SHOCKS. Because Cle-Air spring control units are BOTH hydraulic and pneumatic, they give a ride of unmatched smoothness. Air resiliency absorbs the shocks, while the hydraulic resistance of oil prevents recoil.

SUITABLE FOR ALL TYPES OF FLEETS. Cle-Air units are equally efficient on busses and trucks, as well as semi, full or special trailers. They do an outstanding job on all sizes of vehicles—from light to extra heavy duty equipment.

PROMOTE FLEET CONSERVATION IN MANY WAYS. Cle-Air units reduce wear and breakdowns by "short-circuiting" shocks before they reach the body, chassis, and springs. Tire wear is decreased because "sidesway scuff" and "buffing," due to rolling and bumping, are eliminated. Driver fatigue and load damage are also lessened.



Built to Aircraft Tolerances. Because they are precision made, Cle-Air units, if properly serviced, will last as long as the vehicle.

Write for complete information on Cle-Air protection

THE CLEVELAND PNEUMATIC TOOL COMPANY
Automotive Division • Cleveland 5, Ohio

CLE-AIR *Spring* CONTROL UNITS

The increased number of tire changes on America's highways during this war has further proved that it pays to have a Hein-Werner Hydraulic Jack in the tool kit of every truck.

Drivers say . . . "Changing tires isn't such a tough job when a man uses a Hein-Werner Jack." These sturdy, compact hydraulic jacks are super-powerful, easy-operating, and absolutely dependable.

Made in models of 3, 5, 8, 12, 20, 30 and 50 tons capacity . . . Ask your H-W Jobber for details, or write us.

HERE'S WHY H-W HYDRAULIC JACKS *are easier to operate*

In a split-second, mere finger pressure is transformed into a lifting force of several tons

1. Exert a 2 lb. pressure on the end of jack handle "A".

2. This causes a 50 lb. downward pressure on piston "C" when "A" is 25 times as long as "B".

3. . . . Which becomes a 2½ ton *upward* force on the ram, since the lower surface of the ram has 100 times the area of pump piston "C".

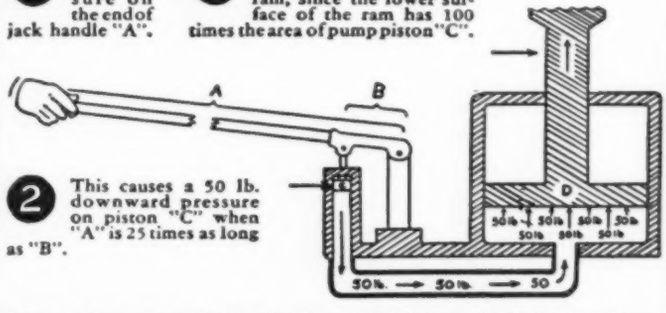


Diagram above shows basic principles of Hein-Werner Hydraulic Jack-Power

HEIN-WERNER MOTOR PARTS CORP., WAUKESHA. WISCONSIN

Another PLUG for "PLUG-CHEK"

AUTO-LITE SPARK PLUGS
TOO HOT
TOO HOT
IF YOUR SPARK PLUGS LOOK LIKE THIS THEY ARE OPERATING TOO HOT AND MAY BE CAUSING LOSS OF POWER
NORMAL
REFER TO PLUG CHEK DATA BOOK FOR DETAILED INFORMATION
AUTO-LITE "PLUG-CHEK" INDICATOR
TOO COLD
TOO COLD
IF YOUR SPARK PLUGS LOOK LIKE THIS YOU ARE PROBABLY USING TOO MUCH GAS, TOO MUCH OIL OR BOTH
AUTO-LITE SPARK PLUGS

"PLUG-CHEK Guides New Mechanics"

. . . says THE N. D. MASELLI CORPORATION OF BLOOMFIELD, CONN.

"Plug-Chek"—Auto-Lite's famous and accurate gauge of spark plug effectiveness—gets one more boost from an enthusiastic user. The Maselli organization—modern earth movers of Bloomfield, Conn.—says:

"We believe that the Auto-Lite Company should be complimented for making "Plug-Chek" available. Using "Plug-Chek" has solved a difficult problem in operation by helping unskilled mechanics to determine effective plug operation. By means of the color of the spark plug insulator and the use of a data book as a guide, "Plug-Chek" helps them select the proper plug for the particular installation."

Find out for yourself how "Plug-Chek" can help you cut maintenance costs. We'll be glad to send you a complete "Plug-Chek" kit free of charge. Write to

THE ELECTRIC AUTO-LITE COMPANY
Merchandising Division
TOLEDO 1, • OHIO

BUY WAR BONDS

AUTO-LITE SPARK PLUGS

IGNITION ENGINEERED BY 'GNITION ENGINEERS

TUNE IN "EVERYTHING FOR THE BOYS" STARRING DICK HAYMES —EVERY TUESDAY NIGHT—NBC NETWORK

No. 55 Speaker *Super-Quality* Tire Repair Units . . . six in package. Other sizes: 7" Sidewall, 7" 9", 8½ x 11" and 10 x 12" . . . all "packaged for protection."

Safe Tire Repairs . . .

ANY TIME, ANYWHERE *with* NEW SPEAKER "SHOP-*and*-ROAD" *Packages of "Super Quality" Tire Repairs*

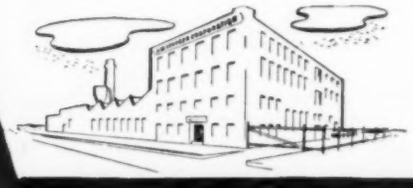
In your repair shop, or for emergency repairs on the road, the new Speaker "Super Quality" Self-Vulcanizing Tire Repairs are "tops" . . . ready NOW to help you lick the serious tire shortage problem. Not only are they the best tire repair, but also are packaged best, for protection right up to time of use, and for convenience in handling and storing.

These are more than mere "blow-out shoes" for casings! "Built like a tire," with tough, crisscross cord construction, FlexForm molded "feather edge," cushion-gum laminated for automatic self-vulcanizing by road heat, SPEAKER "Super Quality" Tire Repairs are adding thousands of extra miles to tires that would have "given up" long ago.

Anyone can apply them, any time, anywhere . . . in shop or alongside the road . . . no special equipment required . . . they won't shift, slip, buckle, or cause undue wear on tube.

SPEAK TO YOUR JOBBER about SPEAKER!

Speaker jobbers are serving thousands of fleet owners with "SUPER QUALITY" Tire Repair Units, including the large truck sizes (8½ x 11" and 10 x 12" units) . . . and with Speaker "MATCH PATCH" Tube Vulcanizing Units and Equipment. Now, more than ever, Speaker units are needed for crude as well as synthetic tire and tube repairs . . . to conserve rubber and increase tire mileage. Order from your nearest jobber, now.



Speaker "Super Quality" Tire Repair Units

Speaker "Match Patch" Tube Vulcanizing Units

No. R-50 "Match Patch" Service Station Group Package

"GU" Giant Universal "Match Patch"

Speaker "Match Patch" Complete Vulcanizing Outfits

More Important Than Ever . . . All Tube Repairs *MUST* be Vulcanized!

THE *Leading* AND *Complete* LINE OF SAFETY VULCANIZING TUBE and TIRE-REPAIR

J. W. SPEAKER CORPORATION

3059 NORTH WEIL STREET
MILWAUKEE 12, WISCONSIN

NEW K-D REPLACEMENT PARTS SERVICE

SIMPLIFIES PARTS IDENTIFICATION
SPEEDS INSTALLATION, SAVES BROKEN PARTS

● No more fumbling through complicated parts lists—no more guess-work at reassembly—your K-D jobber's new Replacement Parts manual simplifies identity, ordering, and installation.

So go to Lighting Headquarters, your K-D Jobber, when you have Safety Lighting trouble. He can tell you what parts you need—and, chances are, he will have them in stock. His unique K-D Parts manual will direct the assembly. You'll be surprised at the money and time you can save with K-D's complete replacement parts service.

Here is one more reason it pays to standardize on K-D, the superior line of Safety Lighting. Whatever your lighting needs—new lamps, mirrors, reflectors, or parts for used ones—your K-D Jobber has the complete line. He is prepared always to give you the right light for the right job at the right price.

THE K-D LAMP COMPANY, CINCINNATI, OHIO

Shop superintendents—ask for your free copy on your firm's letterhead

K-D LIGHTING

The Right Light for the Right job

Heil leads the way in Weight Saving

for greater payloads and increased profits

The elimination of dead weight on your equipment means greater payload and better hauling profits for you. You conserve the life of your truck — there is no additional wear on the tires when you substitute live payload for useless dead weight.

Heil engineers have simplified the design of arm hoists to outlast conventional hoists without the use of heavy construction members. Every part is scientifically engineered and built with the least possible weight consistent with the job it has to do. Its ability to perform dependably has been proved in the toughest kind of service.

Heil pioneered the use of welded fabrication to replace heavy castings in many types of equipment. The same Heil engineers who have been so successful in eliminating dead weight on Heil "Trailerized" Tanks and Heil Road Machinery are now making exhaustive scientific tests to determine the heavily stressed points that need strengthening — and are likewise cutting down the weight of those sections that are lightly stressed. As a result you can carry greater payloads with the same overhead at no extra cost to you.

Let the knowledge acquired by Heil's years of experience and research guide your judgment in making a sound investment. Specify "Heil" and have a dependable hydraulic dump unit that gives you years of satisfactory service.

Write for bulletins.
Consult your nearby Heil distributor.

BH-89

Heil offers a complete line of light-, medium-, and heavy-duty dump units with arm, telescopic, or twin-cylinder hoists.

ARMY NAVY

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

N·A·P·A
National Automotive Parts Association
Assurance of Quality

The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

There isn't a single Hand Tool available today that can afford to be idle. For, until *all* the fighting is over the needs of our combat forces will always claim first attention. Yet, America's rubber-tired, wartime transportation becomes more critical daily and you are charged with the responsibility of keeping it in repair and on the move here at home. That means Hand Tools for the job, but it also means we've got to make present Tools go further and do more.

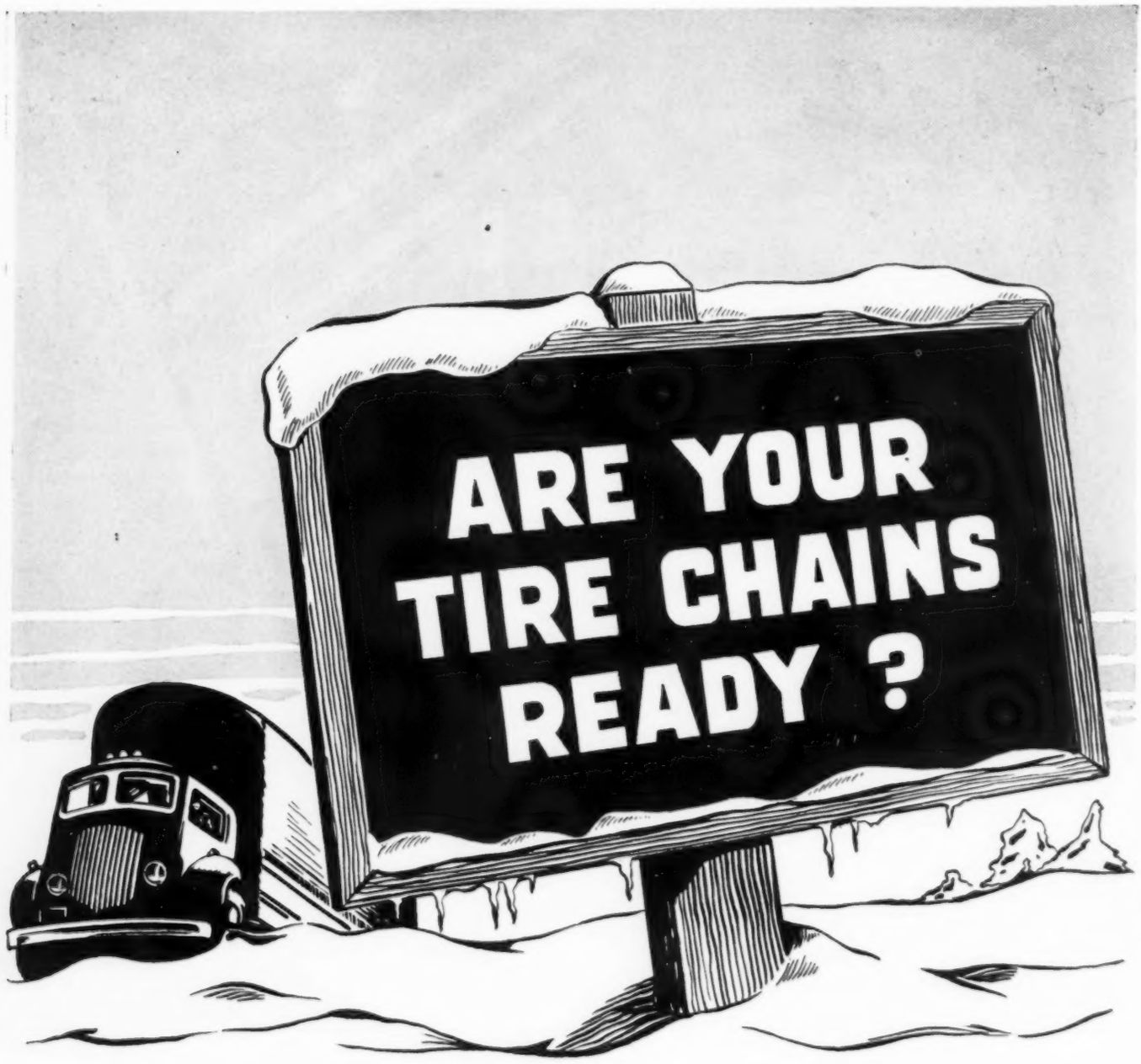
When replacements are needed to maintain your vital services, you can be supplied. End your speculation about new Tools and delivery dates and keep on with your wartime job. Here's a really practical means of learning at once—*How, What and When* the Tools you need are available . . . the answers are all wrapped up in New Britain's Tool Availability Lists . . . ask your NAPA Jobber to show them to you today. The New Britain Machine Co., New Britain, Conn.

New Britain

ARMY E NAVY

The Army-Navy "E" Pennant, with star, flies over New Britain's plants, signalizing outstanding production of machine tools, aircraft engine parts and projectiles.

THE NEW BRITAIN MACHINE CO. **HAND TOOLS**



Heed this warning before the storm

When trucks are stalled in winter's drifts it's too late to start thinking about tire chains. Limitations on manufacture of new chains will make chains hard to get if that big storm finds you unprepared or un-repaired. Fix up those old chains first, and fix 'em right, with new Pyrene cross chains and repair parts. Then, properly installed, they'll serve for miles and miles. Replace with new chains only when absolutely necessary.

PYRENE CHAIN GUIDE

Your Pyrene jobber has a new chart for you. Ask for it. It shows your drivers and shop men how to install and conserve tire chains. Get genuine Pyrene Chains and Repair-Parts from your jobber.

Pyrene Manufacturing Company
NEWARK 8 • NEW JERSEY
ATLANTA • KANSAS CITY • CHICAGO • SAN FRANCISCO
Affiliated with C-O-TWO FIRE EQUIPMENT COMPANY

Pyrene TIRE CHAINS

A "BREAK" FOR HARD-WORKING ENGINES THAT'S EASY ON YOUR PURSE

If your operating costs show a modest but persistent increase, check carefully into spark plugs.

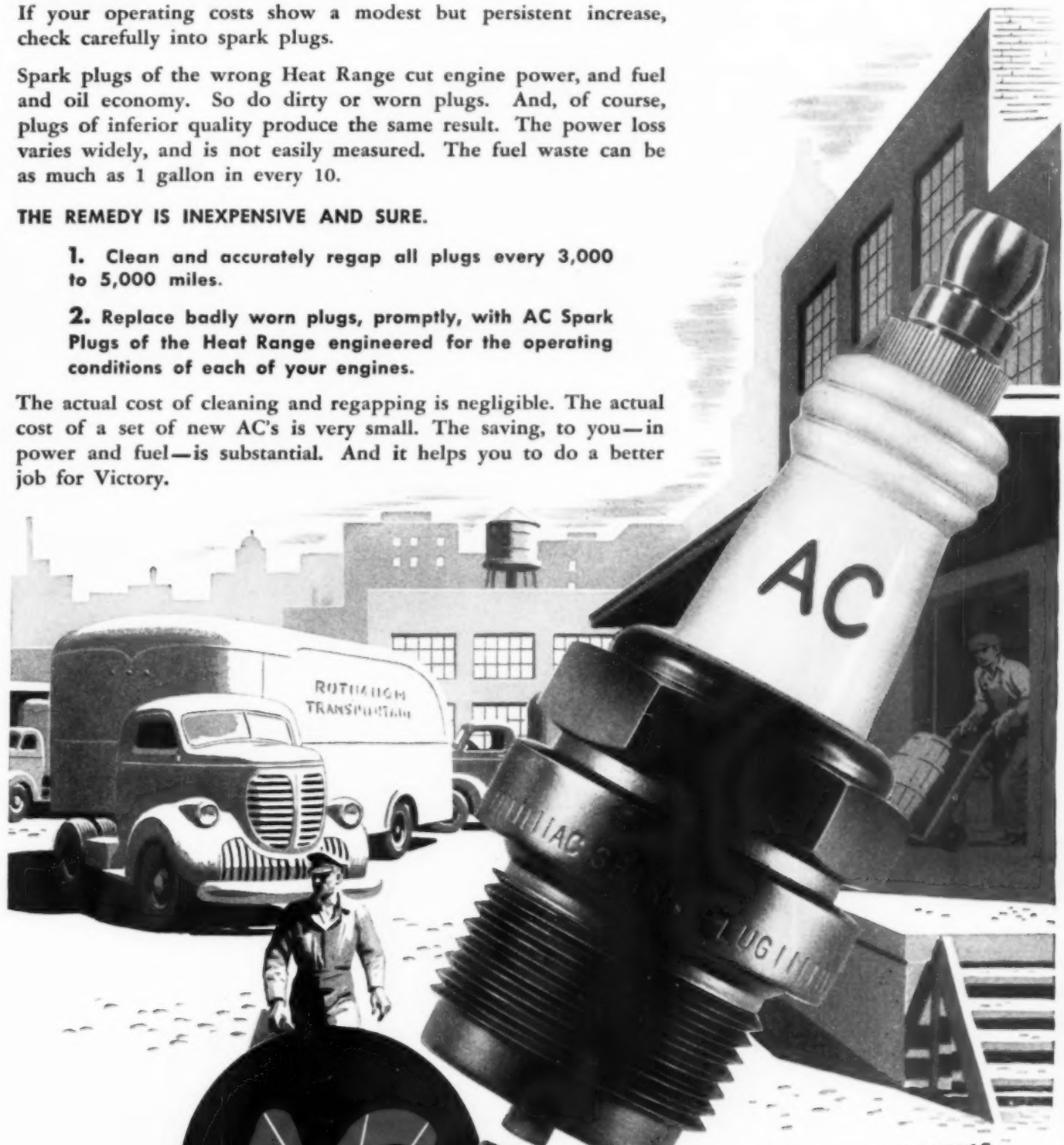
Spark plugs of the wrong Heat Range cut engine power, and fuel and oil economy. So do dirty or worn plugs. And, of course, plugs of inferior quality produce the same result. The power loss varies widely, and is not easily measured. The fuel waste can be as much as 1 gallon in every 10.

THE REMEDY IS INEXPENSIVE AND SURE.

1. Clean and accurately regap all plugs every 3,000 to 5,000 miles.

2. Replace badly worn plugs, promptly, with AC Spark Plugs of the Heat Range engineered for the operating conditions of each of your engines.

The actual cost of cleaning and regapping is negligible. The actual cost of a set of new AC's is very small. The saving, to you—in power and fuel—is substantial. And it helps you to do a better job for Victory.



SEND FOR THESE SHOP MANUALS

Field Service Dept., AC Spark Plug Division, G.M. Corp.
910 Union Industrial Building, Flint, 3, Michigan
Gentlemen: Please send at once, no charge, the AC Shop Manuals checked: FO-10

- ☐ HOW TO SERVICE SPARK PLUGS
- ☐ How to Service Spark Plug Cleaner
- ☐ How to Service Oil Filters
- ☐ How to Service Fuel Pumps
- ☐ How to Service Air Cleaners
- ☐ How to Service Speedometers
- ☐ How to Service Ammeters and other Instruments

NAME_____
FIRM_____
STREET ADDRESS_____ STATE_____
CITY_____

BRING YOUR FIGHTING MAN HOME SOONER • *BUY ANOTHER WAR BOND*

MEN WHO KNOW TIR

There's Winning It's

PENNSYLVANIA TIRES

MANUFACTURED BY THE ORIGINATORS OF THE

Silent Vacuum Cup Tire

PENNSYLVANIA RUBBER COMPA

W TIRES ARE SAYING . . .

an Old Name New Fame PENNSYLVANIA

From Suez to San Francisco, men who know tire performance today know you can count on PENNSYLVANIA Tires for longer wear under the toughest going. Every Pennsylvania Tire has these three long-life features, all originated by Pennsylvania engineers:

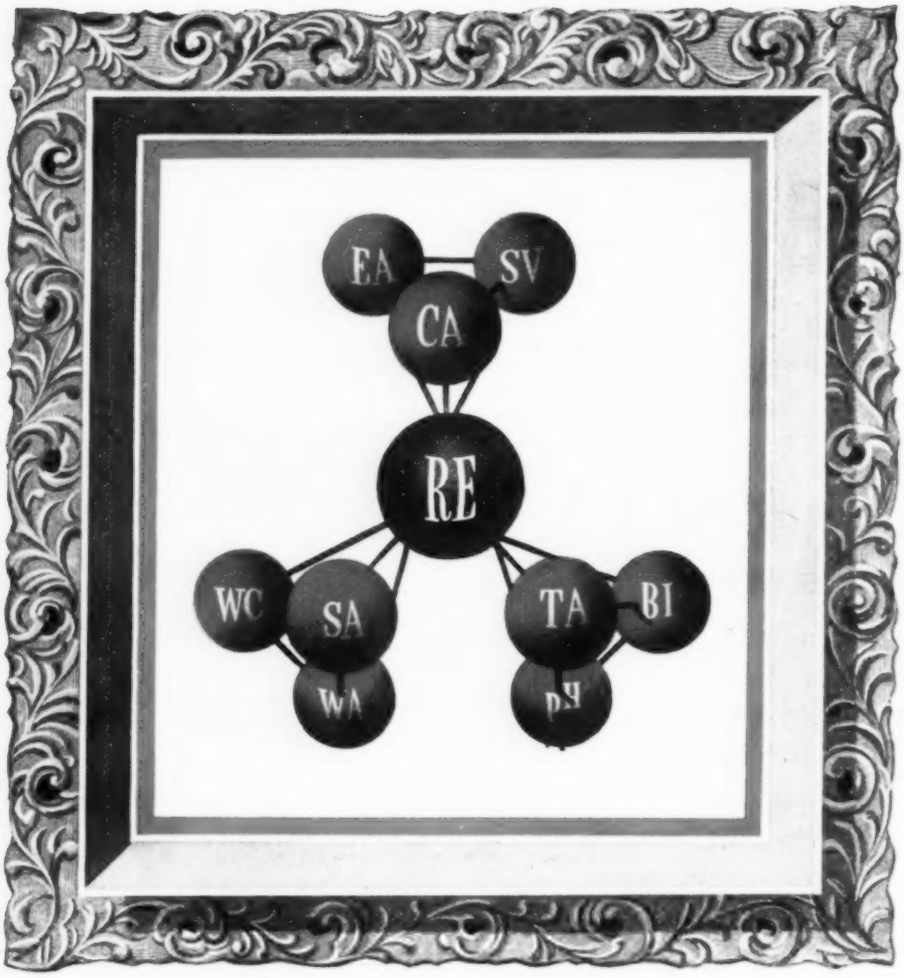
DUAL PURPOSE TREAD—Pennsylvania was the first to use the dual tread—tough, wear-resisting outer tread and cool-running inner tread. A big plus value in extra miles!

SUPER-TEST CORD CARCASS—Pennsylvania Tires have the tough, shock-absorbing Super-test Cord carcass—another reason Pennsylvania Tires are the choice of men who know tires.

SUPER PRESSURE CURING—Hailed as one of the greatest developments in tire engineering. Super Pressure Curing gives Pennsylvania Tires a more flexible carcass, greater tread density—longer life.

Ask your Pennsylvania dealer for this pocket-size Tire Manual, or write to Jeannette, Pa. for your copy.

JEANNETTE, PA.



PORTRAIT OF A CHASSIS BEING BATHED

Whether you are washing the exterior of a truck, removing carbon from a piston, or cleaning the upholstery of a bus, this is the picture of working factors in the scientifically balanced chemical compound. It is also the picture of a cup and saucer being washed. It is a cement floor being mopped. *It is Turco in action.*

The relative value and balance of all the factors is determined by RE; for Research and Experience are the directing agents. They assign roles, give to each agent the correct emphasis, balance them all (one factor does not insure effectiveness in a compound any more than one drug in a prescription). RE symbolizes two decades Turco laboratories have devoted to solving industry's vital problems in the conditioning, maintaining and cleaning of surfaces. Take advantage of it on everything from washing a locomotive to preparing aluminum for anodizing. Call the Turco Field Service Man, or write to Turco.

- *—Emulsifying Action disperses grease and oil as tiny globules, suspends them, and prevents redeposition.*
- *—Colloidal Activity disperses solids into minute particles easily removed.*
- *—Saponifying Value is the ability to convert organic fats and oils into soluble soaps.*
- *—Total Alkalinity (or acidity) is the total amount of either available for cleaning.*
- *—Buffer Index is the ability to absorb either alkaline or acid soil to prolong solution efficiency.*
- *—A yardstick for measuring the energy of alkalinity or acidity.*
- *—Solvent Action is the ability to put soil into solution.*
- *—Wetting Action lowers surface and interfacial tensions, causing solution penetration to base surface.*
- *—Water Conditioning removes or controls the elements which cause water hardness.*
- —all the elements above are mobilized through Turco's Research and Experience.*

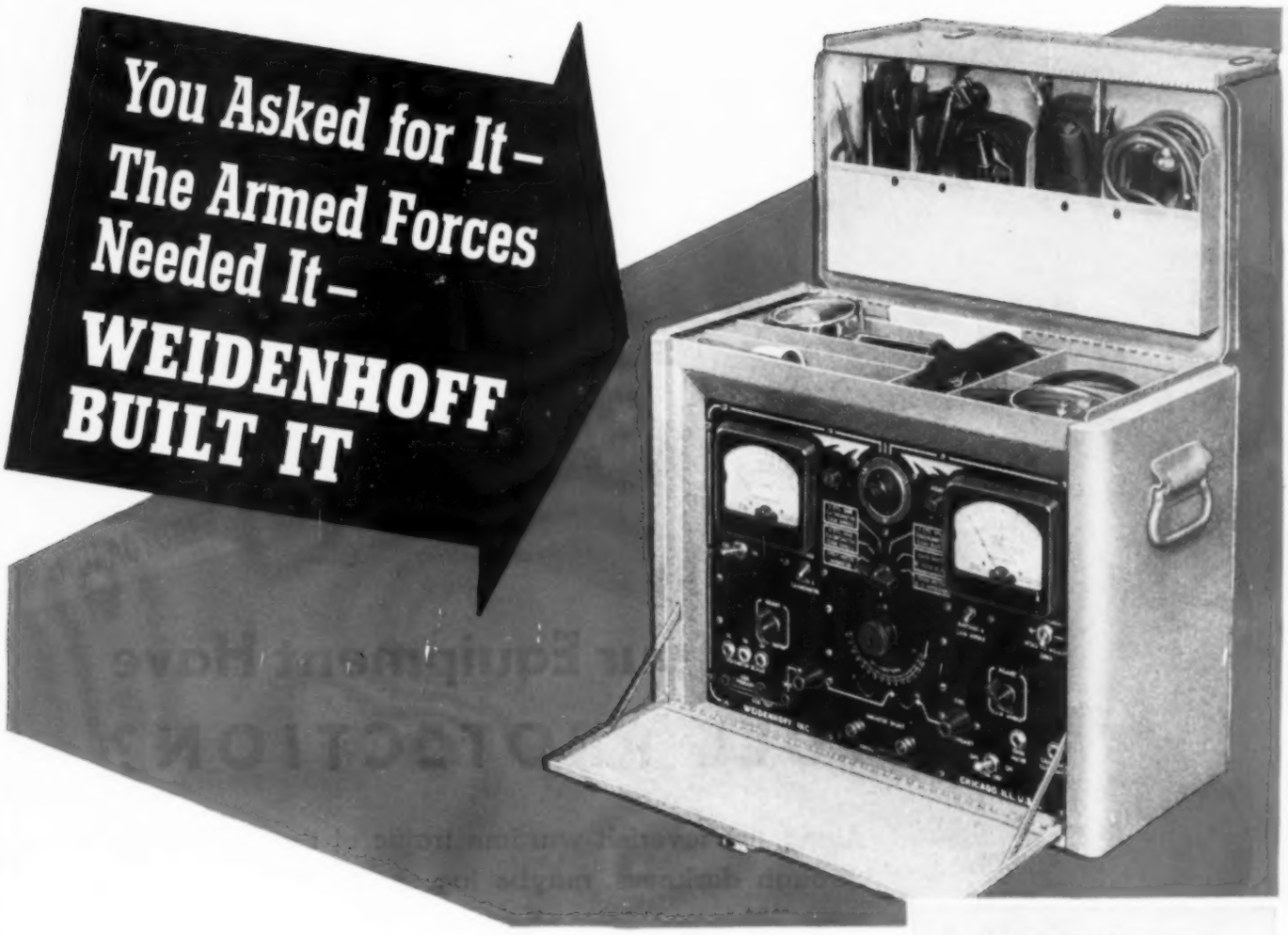
* *For a fuller explanation of these vital factors, write for Turco's "The Chemistry of Chemical Compounds," on your letterhead, please.*

TURCO

INDUSTRIAL CHEMICAL COMPOUNDS

TURCO PRODUCTS, INC. *Main Office and Factory:* 6135 S. Central Avenue, Los Angeles 1 • *Southern Factory:* 1606 Henderson Street, Houston 10, Texas • *Chicago Office and Factory:* 125 West 46th Street, Chicago 9, Illinois • *Offices and Warehouses in All Principal Cities*

You Asked for It— The Armed Forces Needed It— WEIDENHOFF BUILT IT



- A complete engine and electrical system analyzer operated right from the battery (either 6 or 12-volt) in the motor vehicle being serviced.
- This feature makes the analyzer truly a portable one.
- It's precision-engineered, ruggedly built of quality materials to give you many years of reliable, uninterrupted service.
- Complete with all necessary accessories—right in the case.
- Electronic circuits used in analyzer insure accurate tests when using the battery as the source of current.
- With a minimum investment on your part this analyzer produces greater profit for you and many more satisfied customers. It's not too soon to place your order now for later delivery. Ask for complete information on the Model 1019 Analyzer.

Leads and test units instantly available. Illustrated operating manual shows how every test is made.

The analyzer is compact and easily carried. Only 21½ in. wide, 18 in. high and 9 in. deep.

ENGINE ANALYZERS • BATTERY CHARGERS • MAGNETO TESTERS

AUTOMOTIVE SERVICE WEIDENHOFF EQUIPMENT AVIATION

JOSEPH WEIDENHOFF, INC.

CHICAGO 24, ILLINOIS

TEST BENCHES • ELECTRICAL TESTING AND SERVICE EQUIPMENT

WHEN THE LIGHTS GO ON AGAIN TONIGHT!

Will Your Equipment Have FULL PROTECTION?

Along the feverish wartime traffic of the highway—through darkness, maybe fog or slashing rain—will your lights see your equipment through—safely and speedily?

IMMEDIATE DELIVERY

HEADLIGHTS!

DRIVING LIGHTS!

FOG LIGHTS!

Play it Safe with

KING BEE SEALED BEAM

WRITE FOR LITERATURE

AMERICAN AUTOMATIC DEVICES CO.

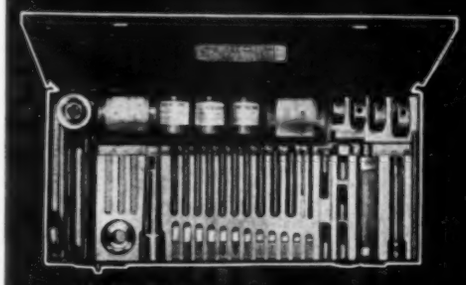
Manufacturers of the Famous KING BEE Products

HARRISON, THROOP AND CONGRESS STREETS • • CHICAGO, ILL.

MANUFACTURERS OF FINE TOOLS AND EQUIPMENT

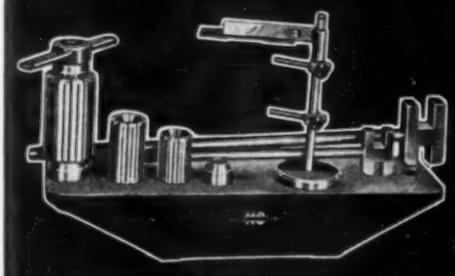
for over 30 years

VALVE SEAT GRINDERS



VALVE SEAT INSERT TOOLS

VALVE SEAT RINGS



CONNECTING ROD ALIGNERS

A. C. ARC WELDERS

For more than 30 years Knock-Out engineers have been developing fine tools and automotive maintenance equipment. Today K-O products are being manufactured in one of the most modern plants of its kind — True proof of their accepted leadership.

Cars, trucks, buses and tractors demand more service than ever before. It is going to be a long time before new ones are on the market in sufficient quantities to replace those now in operation. THEY MUST BE KEPT ROLLING!

If you have not already learned about Knock-Out automotive maintenance equipment — write today! You owe it to yourself, your customers and to your country! A limited quantity of this equipment is available to qualified purchasers.

K. O. LEE COMPANY - - ABERDEEN, SO. DAK.

LITERATURE WILL BE GLADLY SENT ON ANY OF THE FOLLOWING PRODUCTS:

Valve Seat Grinders
Valve Seat Insert Tools
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Connecting Rod Aligners
Reamer Drives
Drill Chucks
A. C. Arc Welders
Expanding Mandrels
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Your Trucks are Advertising Media too ...with MEYERCORD TRUCK DECALS

Every unit in your fleet is a "rolling billboard"! Companies that sell space on their trucks charge as high as $240.00 per truck per year. The space on YOUR trucks is of equal value for YOUR OWN USE...and it doesn't cost a cent! Sell your company name, product or service in this FREE space with colorful Meyercord Truck Decals. They're durable, weather-tested and economical for a dozen trucks or a thousand. Any design, in any size or colors can be reproduced at a fraction of handpainting cost. Fast, overnight application saves labor, money and idle truck time. Free designing service on request. For further details, address all inquiries to Department 31–10.

Buy War Bonds-and Keep Them

The Curtiss truck and Ohio Farmer's Dairymen fleet illustrated are typical of the many alert fleet operators using genuine Meyercord Truck Decal decorations.

FREE! Send for your copy of Meyercord's *Truck Visualizer* containing helpful truck decorating data and outline diagrams of trucks for experimental sketches.

THE MEYERCORD CO.

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For Our Secure Economic Future

GIVE AMERICA HIGHLY SKILLED MEN

Can America meet the ruthless economic challenge of a war-exhausted world?—***indeed she can!***

How?—by creating a nation of highly skilled workers unmatched throughout the world! By teaching to unskilled men the skills that will lift them to better, richer living! By recognizing that ***unskilled labor adds nothing to a product except cost***—and by insuring lowest cost through planned, engineered, mechanized materials handling.

Clark Tructractor is conducting an exhaustive inquiry into the materials handling requirements of post-war industry—in order to design better equipment to meet those requirements. You are invited to participate in that study by sending for a questionnaire concerning the post-war materials handling needs of your business.

CLARK TRUCTRACTOR DIVISION, Battle Creek, Michigan.

TURN PAGE FOR MORE DATA →

FORK TRUCK

Fast, sturdy, easy to maneuver in close quarters, Clark Fork Trucks are on the job 24 hours of every day—lifting, moving, tiering, stacking loads of 1000 to 7000 pounds.

CLARKAT

Through busy aisles, and from docks and warehouses, these husky Clarkats haul trailer trains carrying loads 20 times their own weight. Twin front wheels assure stability. Gas powered.

CLARKTOR-6

At railway terminals and airports, across factory yards, the "Clarktor-6" is ideal equipment—hauling heavily loaded trailers. This all purpose heavy duty tractor with its six-cylinder engine, has a remarkable performance record.

Electric FORK TRUCK

Here is another consistent worker—Clark Fork Truck **electric powered.** Compact and rugged, with smooth, even power, it handles loads from 1000 to 7000 pounds, saving vital man-hours and money. A better unit at a lower price.

A GUARANTEE OF USEFULNESS

For nearly three decades users of Clark Fork Trucks and Industrial Tractors have been getting the sturdy usefulness and low-cost performance which the name Clark instantly guarantees. Clark engineers are at your service for study of your materials handling problems.

CLARK TRUCTRACTOR

Division of CLARK EQUIPMENT COMPANY • BATTLE CREEK, MICHIGAN

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Another PRODUCT of CLARK EQUIPMENT COMPANY

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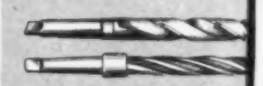

DRILLS AND REAMERS

GEARS AND FORGING

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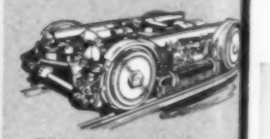
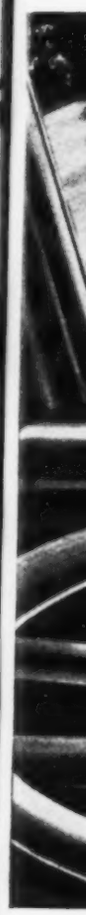


RAILWAY CAR TRUCKS

METAL SPOKE WHEELS



ENGIN P

October,

with VICKERS Hydraulic POWER STEERING

Just two fingers turn the steering wheel and the front wheels follow *exactly* . . . the Vickers Hydraulic Power Steering System does the work instead of the driver. And this heavy truck steers just as easily over rough ground as on smooth pavement. No shock load can be transmitted from the front wheels back to the steering wheel . . . thus relieving the driver of considerable fatigue resulting from constant road shocks he must absorb with the conventional mechanical steering gear.

Among the many other advantages of Vickers Hydraulic Power Steering are: easy application to existing chassis designs, automatic overload protection for both steering linkage and hydraulic system, wheel "fight" is impossible, automatic lubrication, and 14 years of successful operating experience on trucks, buses, road machinery, etc. For all the facts about Vickers Hydraulic Power Steering, ask for the new Bulletin 44-30.

VICKERS *Incorporated* • **1422 OAKMAN BLVD.** • **DETROIT 32, MICHIGAN**

Application Engineering Offices: CHICAGO • CLEVELAND • DETROIT • LOS ANGELES • NEWARK
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VICKERS Hydraulic POWER STEERING is Simple . . . Compact . . . Easily Installed

Please mention FLEET OWNER *when writing to advertisers.*

HOMESTEADERS' STAKE

IN 1862 Congress opened the public lands for settlement by "homesteaders." In return for the settler "staking" out a homestead, living on the land and improving it for 5 years, he received a clear title to his "stake" of 80 to 160 acres. More than 85,000,000 acres were thus claimed under the Homestead Act . . . over 600,000 individual *trades* that benefited a host of homesteaders and contributed tremendously to the welfare and wealth of the United States!

You, too, will make a BENEFICIAL TRADE when you trade your ailing fuel pumps to your Jobber for - - -

"Airy" Tex

Assembled with AIRTEX Diaphragms Guaranteed for 50,000 Miles

Factory Tested AIRTEX *Exchange* FUEL PUMPS

"Your profits climb with the AIRTEX Line"

BUY WAR BONDS

AIRTEX AUTOMOTIVE CORPORATION, FAIRFIELD, ILL.

For safety after dark

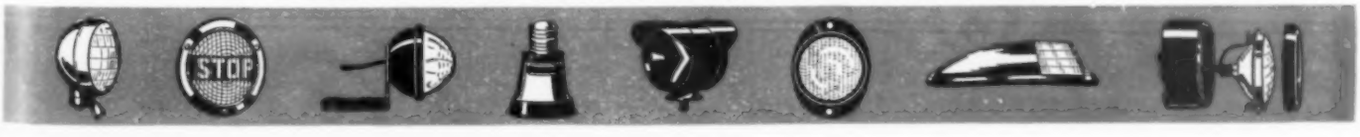
Long before a stage galloped by at night you could hear it rattling up the valley and see its lanterns blinking along, warning other vehicles to keep clear. Proper lighting for safety after dark was important even then.

Today, National Safety Council figures show that most accidents occur after dark, and, of these the greatest single cause is improper lighting. Measured in terms of possible law suits, damage to equipment, and sometimes loss of life the cost of proper lighting is most insignificant.

Like the Tail Lamp shown above, all Arrow products are built to give long, satisfactory service . . . and to meet State and I.C.C. requirements. "For Safety After Dark" ask your Jobber salesman for Arrow Lights, or send for catalog.

FOR SAFETY **ARROW** ***AFTER DARK***

SAFETY DEVICE COMPANY, MOUNT HOLLY, NEW JERSEY



When Johnny Comes Marching HOME . . .

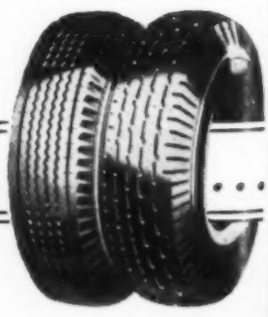
SOME DAY this great moment will be here. To children, the soldiers' return will be a happy celebration. To adults, the return of each son or brother will be surrounded with rejoicing and thanksgiving. Though they are more mature now, these boys who left home with shining, eager faces and mischievous looks in their eyes are still the same boys. The memories of their many good qualities need no revision. Needing no revision either is the memory of exceptional service given by Mohawk Quality Tires. When Johnny comes marching home, Mohawks will be waiting to give him top tire performance again.

Mohawk's Free Flex Tire Repair Unit

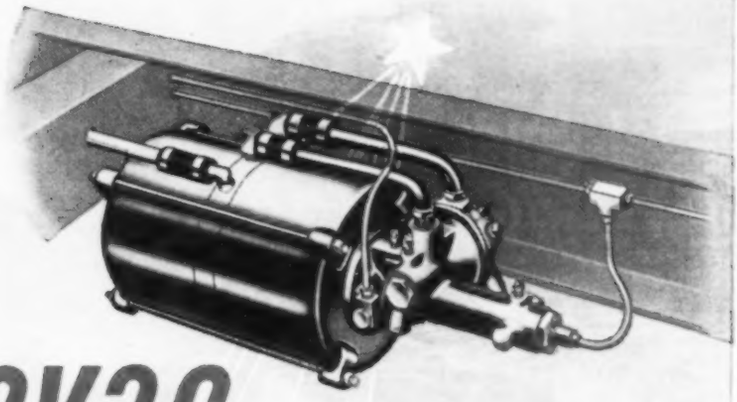
Mohawk Tire Rebuilding Materials

The night and day tire production of Mohawk factories is swelling the supply of "rubber" for jeeps, trucks and countless military vehicles. Mohawk's tire rebuilding materials division is likewise busy turning out Free Flex Repair Units, Air Bags and Recapping Stock to help get the last mile out of truck and passenger car tires. Because of an overwhelming demand, filling of orders for these materials may sometimes be delayed.

The Mohawk Rubber Co.
Akron 5, Ohio



MOHAWK *Quality will be Remembered..* . . .



WHY FLEETOWNERS ARE EQUIPPING THOUSANDS OF VEHICLES WITH Hydrovac POWER BRAKING BY Bendix now!

Farsighted fleet owners know that it is smart wartime strategy to install Hydrovac NOW. Used to replace obsolete or undersized vacuum power braking equipment, or on new vehicles, it is proving the safest, most efficient power braking unit for heavy wartime hauling.

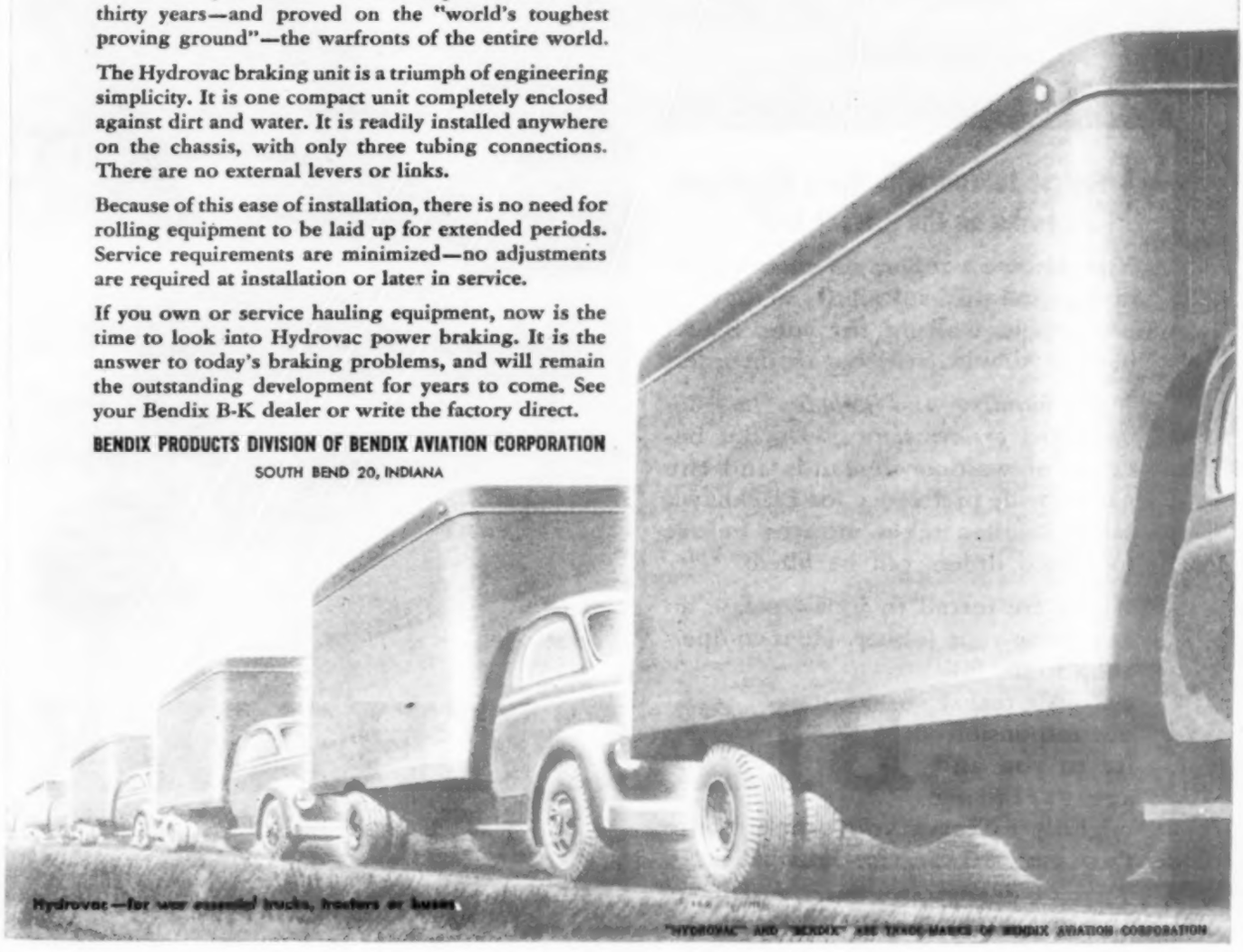
This outstandingly simple and efficient unit is designed and built by Bendix—brake headquarters for over thirty years—and proved on the "world's toughest proving ground"—the warfronts of the entire world.

The Hydrovac braking unit is a triumph of engineering simplicity. It is one compact unit completely enclosed against dirt and water. It is readily installed anywhere on the chassis, with only three tubing connections. There are no external levers or links.

Because of this ease of installation, there is no need for rolling equipment to be laid up for extended periods. Service requirements are minimized—no adjustments are required at installation or later in service.

If you own or service hauling equipment, now is the time to look into Hydrovac power braking. It is the answer to today's braking problems, and will remain the outstanding development for years to come. See your Bendix B-K dealer or write the factory direct.

BENDIX PRODUCTS DIVISION OF BENDIX AVIATION CORPORATION
SOUTH BEND 20, INDIANA



Hydrovac—for war essential trucks, tractors or buses.

"HYDROVAC" AND "BENDIX" ARE TRADE-MARKS OF BENDIX AVIATION CORPORATION

A Report to You Who Have Blackhawk Jacks on the "Want List"

You deserve a report on what we are doing—and we thank all of you for your patience in waiting for your Blackhawk Hydraulic Jacks that are on order.

We're building and shipping Jacks in quantities greater than ever! But because of wartime demands and the nation-wide preference for Blackhawk Jacks, it often takes months before top-rated orders can be filled.

If you are forced to wait—please do not blame your Jobber. He is co-operating to the fullest. We realize our responsibility to you and are striving mightily to serve you quickly with these essential "Service-Proved" Jacks.

A Product of **BLACKHAWK MFG. COMPANY**
Dept. J7104, Milwaukee 1, Wisconsin

FLEET OWNER

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF ALL AUTOMOTIVE FLEETS

Vol. 33, No. 4—October, 1944

WASHINGTON REVIEW

(The Editor's Column)

GAS RATIONING TO OPA

● The ODT announced last month that it is completing arrangements to transfer a part of its commercial motor vehicle gasoline rationing functions to the OPA to become effective about October 15th.

Detailed arrangements concerning the processing of application forms, the issuance of certificates of war necessity, action on appeals and requests for gasoline from commercial users and the procedures to be followed are now being studied by OPA and ODT officials.

As a result of the proposed transfer of a portion of its previous duties to OPA, the ODT highway department regional and district organization will be changed to more nearly coincide with OPA regional and district office locations and boundaries. . . . Regional changes include the closing of the ODT highway department regional office at Kansas City, Missouri, reducing the number of regional offices from nine to eight; and rearrangement of the areas in all regions except Region One, administered from New York City. The regional information, district rail, and district highway department offices in Kansas City, will be continued.

The district and field offices will be reduced to 92 district and 44 field offices, a total of 30 offices being closed. . . . The changes in the regional and district organization are expected to release about 1,000 clerical workers and bring about a saving of over two million dollars a year.

In a statement concerning this change, ODT Director J. Monroe Johnson said: "Present conditions require that the ODT regional highway organization direct a greater amount of attention and effort to the transportation phases of the ODT program, rather than the detailed work of gasoline rationing. After almost two years' review of gasoline allotments to commercial motor vehicle operators, present certifications reflect the general needs of the industry.

"The majority of present changes in gasoline allotments result from unusual conditions, mostly of a temporary nature, which require more knowledge of local conditions than of over-all transportation problems. . . . The new plan frees the ODT Highway Department field forces from the time-consuming work of handling these changes. . . . ODT transportation specialists and technical workers will have more time to devote to the traffic registration program, organization of joint-action plans, maintenance and conservation work, and continuing the orderly movement of farm products."

●

TO GET NEW TRUCKS:

● District managers of the ODT have been instructed not to accept any applications for purchase of new commercial motor vehicles on the old form (WPB 663), as the new simplified form (ODT 663) is now available in all district offices.

This simplified form, which became effective on September 1, following transfer of rationing of commercial motor vehicles from WPB to ODT, must be used by all those applying for certificates of transfer to obtain new vehicles.

Trucks, truck-tractors and trailers are included in the rationing program now completely under the jurisdiction of the Allocation Section of the ODT Highway Transport Department, headed by Matthew E. Kane, section chief.

Full information on the use of the new form is available at all ODT dis-

WASHINGTON REVIEW ....

Continued from Page 57

trict offices. The ODT form will greatly speed the allocation procedure. No applications will be accepted in Washington until they have been recommended for approval by the ODT district office nearest to the place of business of the applicant.

One of the most important changes in the simplified ODT form is the placing of certificates of transfer on the back of one copy of the new form. . . . The WPB certification method required that the certificate be typed on a separate piece of paper. . . . Applications are processed through the 142 ODT district offices throughout the country.

●

USED TRUCK PRICES UP

● Dealers' mark-ups for warranty sales of used commercial vehicles of model years 1937 and later, have been increased by OPA, "in order to encourage their repair and maintenance and keep them on the road". . . . The amendment (No. 5 to MPR 341) also changes the warranty provisions so that dealers are liable for only half the expense that may arise under warranties. (This "50-50" warranty plan is the same as that contained in the used passenger-car regulation). . . . OPA's explanation of the thing is as follows:

Many older models of trucks have reached the stage of use where they cannot be depended on even after being repaired, and there are few replacements for those worn out vehicles leaving the roads.

Prior to the new amendment, warranty mark-ups were not always sufficient to meet expenses incurred in repairing trucks to meet the warranty requirements. Dealers were selling more trucks "as is" than with warranties—a situation that did not help the transportation system relying on trucks being in continuous operation and mechanically capable of carrying unusually heavy cargo.

THE booklet, "Wartime Information for the Delivery Truck Operator" brought to Studebaker this award, in an automotive conservation contest sponsored by Martin-Cantine Paper Co., Saugerties, N. Y.

The amendment increases warranty mark-ups as follows: 15 per cent for 1944 models and 1943 and 1942 models sold new in 1944; 13 per cent for 1943 models and 1942 models sold new in 1943; 9 per cent for 1942 models; 6 per cent for 1940 and 1939 models; and 5 per cent for 1941, 1938 and 1937 models.

The new mark-ups were effected by lowering the "as is" prices for model years 1937 through 1944 and raising the warranted prices for model years 1941 through 1943. This method raised the dealers' "spread" between "as is" and warranty prices—increasing warranty prices but effecting a total general decrease for both types of sales. . . . The new prices also establish a reasonable relationship between prices of new and used vehicles, and reflect abnormal depreciation in values due to intensive use of trucks during the war-time emergency.

The adoption of the "50-50" warranty will also stimulate the reconditioning of trucks. OPA had informed the industry advisory committee of the motor vehicle retail trade during June 1943, that such a warranty would be put into effect if transportation needs and dealer expense for reconditioning and repairs justified the change.

●

CHECK BEFORE YOU BUY

● Prospective purchasers of used trucks are urged by ODT to make certain before acquiring the vehicles that their proposed operation meets all ODT requirements.

Since October 25, 1943, the agency said, persons who were not designated motor carriers as of that date have been required to show that the operation of the truck is necessary to the war effort or to the maintenance of civilian economy.

Application for a Certificate of War Necessity must be made and the certificate granted before gasoline allotments are made, ODT pointed out, or, in the case of a new service, application for authority to inaugurate it must be made. These application blanks may be obtained at the applicant's local ODT district office.

Critical shortages of trucks, tires and gasoline, ODT added, make it necessary that only those operations deemed necessary to the war effort and essential civilian economy be approved, and authority to operate a truck should be obtained by a prospective purchaser before he actually buys it.

●

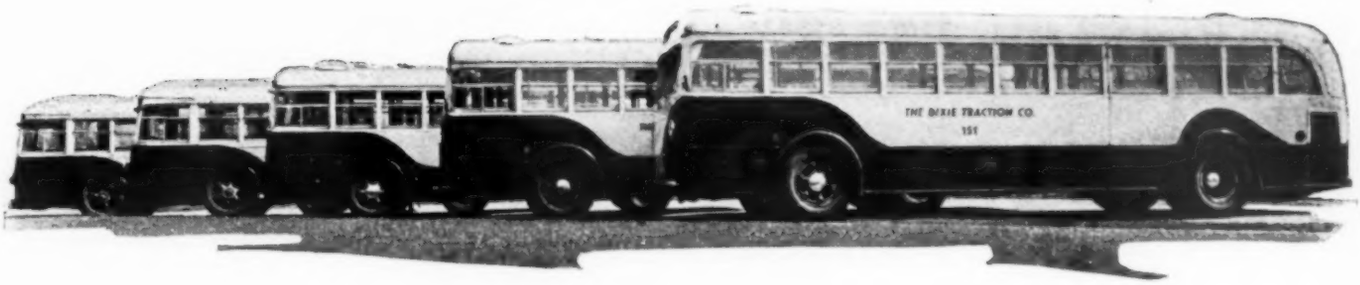
IF YOU NEED TRUCK TIRES:

● Any commercial vehicle operator whose vehicle is out of operation because of lack of tires, should communicate with the local district headquarters of the ODT Highway Transport Department.

"It is probable that immediate aid can be given to assist these operators in locating tires," officials said. "This will apply only to those holding Certificates of War Necessity, whose operation is essential to the war effort and whose vehicle is actually laid up. Such operators are requested to keep in touch with ODT's Vehicle Maintenance Section.

"One of the prime functions of ODT is keeping transportation rolling," officials reminded, "and it is vitally important that ODT offices be notified of any difficulties."

TAKE a look at the future of highway transportation. . . . This model is a post-war Greyhound Compartment Super Coach, styled by Raymond Loewy, noted industrial designer, in collaboration with Greyhound engineers and automotive manufacturers' technical experts. . . . The first jobs will be built by Consolidated Vultee and General Motors, for testing in 1945.



"Life of Valvoline Three to Four Times That of Other Oils"

Says the

DIXIE TRACTION CO.

Elsmere, Kentucky

Under present-day difficult conditions —turnover of drivers, maintenance, parts shortages, and many other headaches—fleet operators everywhere are turning to the superior protection of Valvoline. Rolling up a million vital miles a year, The Dixie Traction Company reports substantial economies in the operation of their buses.

You, too, whether your fleet is large or small, can save money and save wear with Valvoline lubricants. Valvoline Fleet Laboratory Service will give you an impartial engineering analysis of your requirements . . . write your nearest Valvoline office today.

THE DIXIE TRACTION CO.
INCORPORATED
ELSMERE, KENTUCKY

May 20, 1944

Valvoline Oil Company
1761 Elmore Street
Cincinnati, 23, Ohio

Mr. J. J. McGraw
Fleet Lubrication Department

Dear Mr. McGraw:

Four years ago we were having trouble with the top grade oil of another refiner. Accumulated sludge made it necessary to clean the screens in our buses' oil pans every two or three weeks. We changed to Valvoline, which protected our engines for a total of 1,045,215 miles in 1943.

The first year we used straight Valvoline and then turned to HPO, which has certainly whipped our lubrication problems with the aid of Valvoline's Fleet Laboratory Service. Your recommendations with analyses of crankcase oil samples have resulted in economies of oil, gasoline, and cartridges and decreased wear on parts, engines, and gears.

Our crankcase change period when you took over was 2,000 miles, with an extra cartridge change; now we change from 6,000 to 8,000 miles. That means the life of Valvoline HPO is three to four times that of the other oil. On one unit the overhaul was completed at 110,000 miles on April 25. To the fresh change of Valvoline HPO, only two quarts had been added up to May 11; so you see our oil consumption is low, including added quarts.

Cordially yours,

THE DIXIE TRACTION CO.

Peter J. Keller

Peter J. Keller
Assistant Manager

VALVOLINE OIL COMPANY
579 EAST FIFTH STREET CINCINNATI 2, OHIO
New York-Chicago-Atlanta-Los Angeles-Vancouver
REFINERY IN PENNSYLVANIA

COSTS MORE TO MAKE—COSTS LESS TO USE

VALVOLINE

The 1st Pennsylvania Oil

WASHINGTON REVIEW ....

Continued from Page 58

105,000 BIG TIRES?

● As this issue went to press, the October quota of large size truck tires was tentatively set at 105,000, an increase of 3,000 tires over the 102,000 set for September. . . . This includes, as you know, truck tires of 8.25 and larger sizes.

The quota of truck tire sizes 7.50 and smaller for October was set at 280,000 which is practically the same as the quota for the month of September.

There is, of course, the possibility that these quotas may be increased before the month is out, in the event that production could be increased, or if Germany should give up unexpectedly.

People who *should* know, however, expect that the quotas will remain at about 100,000 and just under 300,000 tires respectively, unless the military situation improves over-night.

●

MUST SELL YOU TIRES

● Tire dealers who sell to consumers are now required by OPA to sell any new tire in their inventories, to any person who presents a valid tire rationing certificate and the purchase price of the tire. . . . Dealers are also required to post daily inventories of their stocks of tires with a cross-section of 8.25 or larger.

This action is being taken, OPA said, because some dealers, as stocks get short, are representing to ration certificate holders that they have no tires for sale, when in fact tires are available.

The result is that persons who have been found by their ration boards to be eligible for new tires are unable to use the tire certificates issued them and this action is designed to help correct that inequity, OPA said.

●

CHANGE IN PARTS PRICING

● Two changes in the regulation establishing wholesalers' and retailers' ceiling prices for automotive parts were announced recently by OPA, as follows:

(1) Exchange Allowance for Trade-Ins: The amendment (No. 4 to MPR 453) specifically states that when a part is exchanged, transferred, or traded in, in connection with the sale of another part, a reasonable allowance must be given for the exchanged or traded-in part and credited to the price of the part being purchased.

This provision was added for the purpose of clarification, since under the previous general wording of the regulation, an exchange or trade-in was always considered to be partial payment of the price of the purchased part. . . . Some retailers of parts, however, had taken the position that it was not necessary to give the purchaser any credit for the part being traded in or exchanged.

(2) Increase in Wholesalers' Allowance for Federal Excise Tax: The amount that wholesalers may add to ceiling prices as an allowance to recover the approximate amount of Federal excise tax has been increased from the previous 3 per cent to 4 per cent.

This increase was made because experience proved that the 3 per cent allowance was not a close enough approximation to the wholesale seller's Federal excise tax expense.

For example, if a seller at wholesale purchases a part with a $10 retail list, at a discount of 55 per cent, he pays the manufacturer 22½ cents for Federal excise taxes. His maximum selling price is $10 less a discount of 40 per cent. Under the 3 per cent provision, he could recover only 18 cents of the 22½ cent tax expense to him. When this 4-cent loss is spread over the sales volume of a seller at wholesale, the amount he would lose during a calendar year might be substantial, in the absence of this action.

ANOTHER rolling billboard working for the War Bond campaign. . . . Brooks Transfer & Storage Company, Richmond, Va., recently repainted many of its trucks and trailers to look like this one, as a contribution to the war effort. . . . Brooks also helps the war effort in a more tangible way—even as you and I—by delivering war goods quickly and on time.

NEW airborne tank drives are now news in the daily press. Here's an airborne tank, made for the purpose, by Marmon-Herrington. . . . It weighs 7½ tons and is designed to be carried intact by air.

●

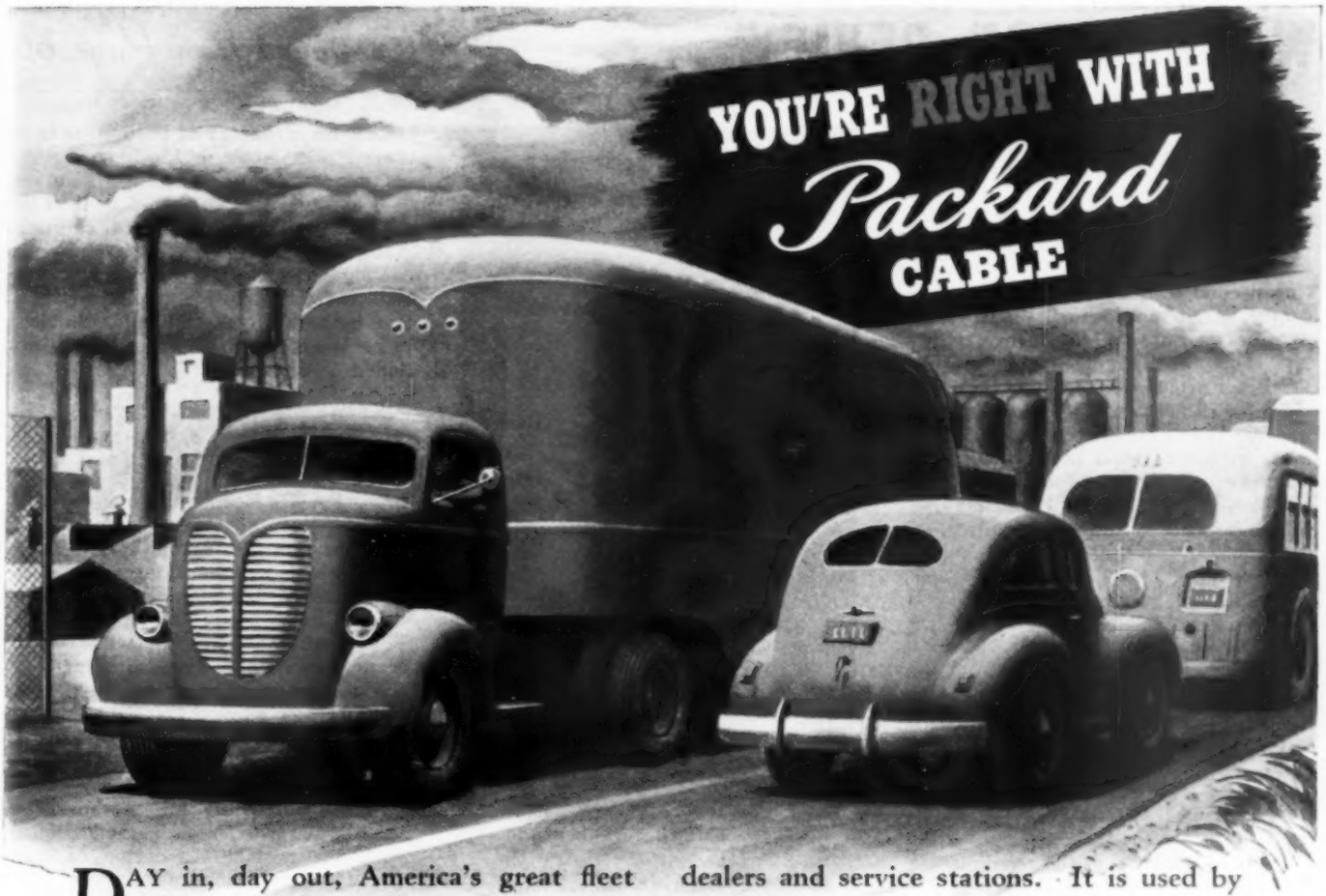
DEWEY'S PROGRESS REPORT

● Col. Bradley Dewey, in retiring as Rubber Director of WPB, stated early last month that he had made an up-to-the minute survey covering the production of heavy-duty truck and bus tires for the past two months. (This is the category in which there has been a critical shortage.) . . . Col. Dewey's statement continued:

"August production of heavy-duty truck and bus tires was about 10 per cent above schedule. There is every indication that the War Manpower Commission will be able to continue making labor available so that improvement in production may be expected. For the third quarter of 1944, total production should be at least 12 percent in excess of the July 1 forecast.

"Additional equipment and facilities will be in place and ready to operate by the end of the 3rd quarter, so that, if additional manpower continues to be made available, it is expected that all essential military and civilian truck and bus tires will be produced during the 4th quarter.

"Due to hot weather, passenger-car tire production during July and August has been slightly below schedule but recent reports indicate an improvement in working hours. Summer production has been at the rate of 1,600,000 tires per month. There is every expectation that this production rate will improve, so that allocations to OPA will be at a rate which will fully satisfy demands of all B and C-card drivers during the cooler autumn and winter months.



DAY in, day out, America's great fleet of trucks, buses and essential cars perform an indispensable wartime service on the home front. Their task is a vital one—and calls for utmost reliability of equipment.

In a majority of these vehicles, Packard cable is used. It is qualified for such an important assignment by its outstanding performance in all types of service during the past 42 years. Packard cable has long been the original equipment choice on the majority of cars and trucks sold. It is the replacement choice of leading garages, car dealers and service stations. It is used by many of the country's principal airlines, and by most leading truck and bus fleets.

Equally widespread is its usage in war equipment — fighter and bomber planes, tanks, landing craft, gun control apparatus, radio equipment, and many others. From such proved performance under severest operating conditions, this fact is clearly evident: When you replace spark plug wires, battery cables and lighting cable — *you're RIGHT in doing the job with Packard cable!*

Keep Buying Bonds—

Lives Depend On It!

ELECTRICAL SERVICE BEGINS WITH GOOD WIRING

Ask your Packard jobber about

PACKARD CERTIFIED RE-WIRING SERVICE

Based on proper checking and replacement procedure, using Packard cable.

Packard
REG. U.S. PAT. OFF.

PACKARD ELECTRIC DIVISION
GENERAL MOTORS CORPORATION
WARREN, OHIO

FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

WASHINGTON REVIEW ....

Continued from Page 60

WPB RECONVERSION PLAN

● Plans for shifting industry from war to civilian output when Germany falls, with "immediate and drastic" elimination of virtually all controls from all but military production needed to defeat Japan, were recently announced by WPB with unanimous approval of Army, Navy and other war agencies. . . . Acting WPB Chairman Krug said, "Industry is to be allowed its own way, according to the availability of markets, men, materials, and plans, to do the swiftest and most effective job possible of restoring production, making whatever people want, and affording employment, just as quickly as possible."

●

PRIVATE CARRIER COMMITTEES

● The appointment of Private Carrier Advisory Committees in 31 cities in the ODT's nine regions throughout the country, was announced last month by A. Henry Walter, Chief of the Private Carrier Section of ODT's Highway Transport Department.

Establishment of the committees, Mr. Walter said, is designed to aid both ODT and the operators in their mutual efforts to achieve further conservation and to promote more efficient utilization of equipment, tires, fuel and manpower in the private carrier field.

Mr. Walter said each ODT district manager in the 31 cities is being furnished with the names of the men appointed to the committee in his district. The district manager will contact the appointees and arrange for the first meeting of the group.

The advisory committees, he said, will advise and cooperate with the district manager on any problems of transportation affecting the private carriers. . . . Cities in which committees have been appointed and the number of members are:

Region 1—New York, New York, 7; Boston, Massachusetts, 7; Newark, New Jersey, 7; Buffalo, New York, 5.

Region 2—Pittsburgh, Pennsylvania, 5; Philadelphia, Pennsylvania, 7; Baltimore, Maryland, 5; Harrisburg, Pennsylvania, 5; Washington, D. C., 5.

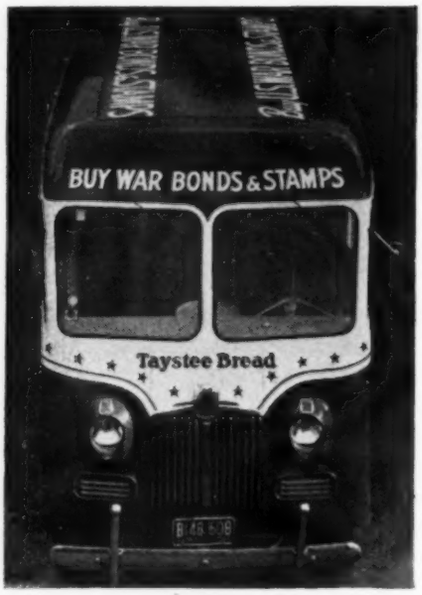
Region 3—Memphis, Tennessee, 5; Atlanta, Georgia, 5; Birmingham, Alabama, 5; Columbia, South Carolina, 5.

Region 4—Cleveland, Ohio, 7; Detroit, Michigan, 7; Toledo, Ohio, 5.

Region 5—Chicago, Illinois, 7; Indianapolis, Indiana, 5; Milwaukee, Wisconsin, 5.

Region 6—St. Louis, Missouri, 7; Omaha, Nebraska, 5; Kansas City, Missouri, 5.

Region 7—Dallas, Texas, 5; San Antonio, Texas, 5; Houston, Texas, 5.



IF you can't spare the sides of your vehicles for war bond advertising messsages, how about the top and front? . . . In spite of the small space, this operator has made a very nice presentation, don't you think?

Region 8—Denver, Colorado, 5.

Region 9—Los Angeles, California, 7; San Francisco, California, 7; Seattle, Washington, 5; Sacramento, California, 5; Portland, Oregon, 5.

●

PRELUDE TO RATIONING?

● Car dealers (as well as all other sellers) are now required to file a certificate of transfer with their local war price and rationing boards, reporting their purchases of used cars, OPA recently announced. . . . Dealers and other sellers generally engaged in the business of selling used cars, were also required to file with their local boards an inventory of all used cars in their stocks on Sept. 11, 1944.

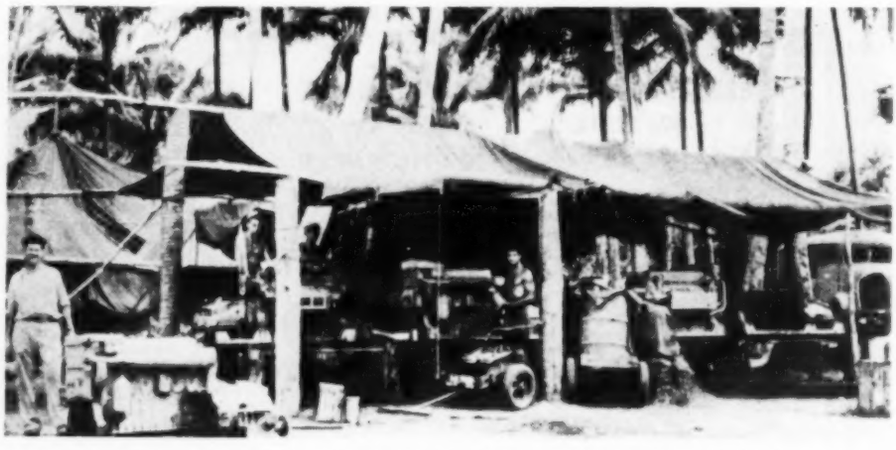
OPA said that this ruling was made in order to make sure that dealers do not sell used cars above legal ceilings. Each certificate of transfer requires a complete description of the car being sold, the selling price, and a certification by both buyer and seller that the price is not in violation of the established ceiling.

●

ENOUGH GAS FOR ALL?

● PAW's Economic Committee recently presented supply, demand and inventory figures through March 31, 1945, which are "not intended to be a forecast of what the Committee considered most likely to happen". . . . They indicate, rather, "what would occur under certain assumptions relative to the duration of the war". . . . The figures show that even though global war should continue throughout this winter, all of the essential civilian demand and necessary ration requirements, plus all the needs of the United Nations, can be satisfied, with the possible exception of relatively small amounts of lubricants, kerosene and distillates, but that these underages will not develop until late in the first quarter of next year.

OWI also issued a report on the gasoline situation, stating that the average civilian motorist should expect no increase in gasoline rations for the next several months. . . . "If war requirements decrease, making more gasoline available for civilian purposes, consideration would be given to the in-course-of-work drivers, who operate on "B" rations, and to the needs of operators of commercial buses and trucks, many of whom have experienced heavy cuts in their annual mileage."



THIS is a service station, believe it or not. . . . Here we see members of the boat maintenance company of the amphibian engineers repairing damaged GM Diesel landing-craft engines in a New Guinea "motor shop", fashioned out of coconut tree stumps and railroad irons. . . . At the left is C. W. Patterson, GM Diesel Engine Division service representative.

Studebaker salutes the Baking Industry

Delivery trucks in the baking industry carried 26.5% more tonnage last year than in 1941, yet traveled 463,246,954 fewer miles.

YOU get some idea of the gasoline, tires and truck repair parts the baking industry has conserved during the war, when you read the figures recently released by the office of Defense Transportation.

According to Colonel J. Monroe Johnson, Director of the O.D.T., the delivery trucks of the baking industry have been operating with 75 percent greater efficiency than in 1941, largely due to the industry's wholehearted compliance with our government's transportation conservation programs.

Surveys made by the American Bakers Association show that baking industry trucks traveled 1,715,729,460 miles during 1941 and 1,252,482,506 miles in 1943—saving 463,246,954 miles while doing more work since the tonnage delivered was 26.5% greater!

As a matter of fact, the decrease in mileage coupled with the increase in tonnage indicates a 73 percent greater average poundage delivered per mile traveled.

Many thousands of free Studebaker booklets on motor truck care in use by bakers

As part of its continuing wartime programs for conserving truck transportation, Studebaker has made available to members of the baking industry many thousands of free copies of its handbook, "Wartime Information for the Delivery Truck Operator".

This comprehensive, 52-page, pocket size handbook for any type of delivery truck operation is obtainable free by asking for it at any Studebaker dealer's or by mailing the coupon below to Studebaker Truck Division, South Bend 27, Indiana.

MAIL THIS COUPON NOW!

This booklet won a National War Themes Award—get a copy and you'll understand why

STUDEBAKER

Pioneer and pacemaker in Automotive Progress

NOW BUILDING WRIGHT CYCLONE ENGINES FOR THE BOEING FLYING FORTRESS—MULTIPLE-DRIVE MILITARY TRUCKS—THE ARMY'S NEW M-29 WEASELS

Studebaker, Truck Division
Dept. FO-9, South Bend 27, Indiana
Please mail free and postpaid sample copy of your handbook, "Wartime Information for the Delivery Truck Operator".

Name .....
Position .....
Firm .....
Street and No. .....
Town and State .....

WASHINGTON REVIEW ....

Continued from Page 62

CIVILIAN GAS STILL TIGHT

● The nation's stockpile of civilian gasoline is at a point where any further increase in military demands will result in a very tight situation for civilians, PAW recently announced. . . . The agency said that although refineries are turning out products in larger quantities than ever before, unprecedented military demands have limited the quantity of gasoline available for civilians.

●

THE ANTI-FREEZE PICTURE

● WPB officials have recently warned that because manufacturers are now well advanced in making up the nation's winter supply of anti-freezes on the basis of allocations of alcohols made several months ago, there can be no variation later in the percentages of the various grades that will be available to the public.

Heavy military and agricultural demands for ammonia, which interfere with the production of methyl alcohol, the basic raw material, have forced a reduction in the amount of methanol-based anti-freezes being produced for use this winter, officials said. The ammonia is need for the production of explosives and fertilizer.

As a result, the great bulk of the anti-freezes that will be marketed this year will be based on ethyl and isopropyl alcohols. However, the overall supply of anti-freeze will be ample for all expected demands, WPB officials said.

●

7-MO. TRUCK PRODUCTION

● Total production of motor trucks and truck-tractors in the first seven months of 1944 was 406,048 units. . . . Broken down, this figure represents 50,540 trucks for civilian use, and 355,508 units for military use, in all sizes. . . . Since there were no light trucks made for civilian use this year, the civilian total of 50,540 units represents 38,574 medium trucks and 11,966 heavy ones. . . . The military figure of 355,508 units includes 143,573 light, 57,361 medium and 154,574 heavy trucks.

AN anchor goes on this truck. It's a "Duck" leaving the Chevrolet assembly line. . . . The anchor is one of the last of the "accessories" to be added. . . . No use for an anchor on land, but it's dandy to have one when afloat.

Production data on motor trucks and truck-tractors for the years 1936 to 1943 inclusive have been revised by weight classification and separated into civilian and military production on the basis of "gross vehicle weight". . . . These figures are now available from the Bureau of Census, Washington, D. C., under the title *"Facts for Industry"* Series.

Previous production figures were assembled on a "rated tonnage capacity" basis. As there was no standardized method employed by the industry in rating tonnage capacity, a large volume of production had been reported in the heavy group, but was shifted to the medium group when reporting on the basis of gross vehicle weight.

These data cover actual production of trucks for military *and* civilian use. They differ from the "factory sales" figures accepted as an index of production before the war. . . . Jeeps, military ambulances and wheel-drive personnel carriers are included; half-tracks and armored cars are excluded. . . . Military classification includes those procured by Army, Navy, Aircraft Resources Control Office, Canada and Treasury for military use. . . . The civilian classification includes those produced for civilian use under WPB Limitation Orders. . . . Production is reported by 37 companies, representing the total industry.

●

TIRE RATION CHANGES

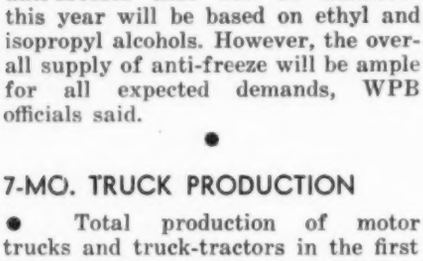
● A certificate for a used truck tire to equip a farm tractor, implement or wagon may be granted only when a passenger-car or tractor-implement tire is not usable. . . . The issuance of used truck tire certificates for these vehicles does *not* depend upon the availability of used truck tires, but upon whether or not the vehicle requires truck tires for its continued operation, OPA recently ruled.

In another ruling, OPA declared that any district director is now permitted to instruct any board to issue a certificate for a truck tire 8.25 and larger, when a decision as to the issuance of the certificate must be reached before an emergency truck tire board can be convened.

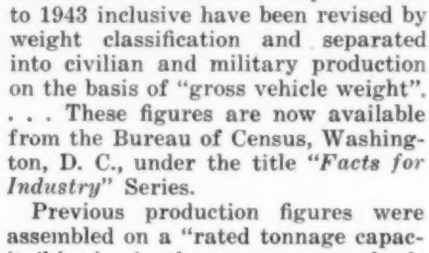
●

825 Mi. per Mo. for SALESMEN?

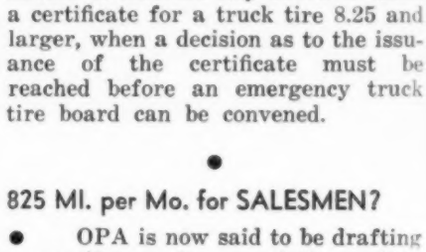
● OPA is now said to be drafting a gasoline ration regulation which will permit certain salesmen to travel 825 miles each month, and the new regulation is expected to go to Chester Bowles for approval soon. . . . Perhaps by the time this finds its way into print, the thing will be announced?



HERE's a 20-ton smokestack, 24 x 18 ft., being towed through a Pennsylvania town to the Philadelphia Navy Yard. The job was done on a big, heavy, drop-frame semi-trailer, towed by a White tractor.



THIS exhibit of damaged military tires at the Goodyear plant in Akron gives you an idea of the terrible punishment that such tires have to take in combat service; also how much salvaging has to be done.



NOW it can be told. . . . Known as M-29, or the "Weasel", it's a new square-nosed personnel and supply carrier, built by Studebaker and powered with the "Champion" pass.-car engine. . . . Tracks are extra wide.

LINES WHICH MUST NOT FAIL

Utilities, the backbone of modern civilization, have long fortified their service with equipment which, like their own, must not fail. Theirs is a rugged service which calls for the stoutest in men and materials ★ That this vital industry was among the first to adopt genuine Bendix-Westinghouse Air Brakes and Pneumatic Controls has been responsible for many brilliant chapters in the performance of this world standard of safety, which has just as important a role in your operations ★ If you would take advantage of the many exclusive features found in genuine Bendix-Westinghouse Air Control you can take the first step by contacting your local Authorized Distributor or by writing direct to the manufacturer. This service is maintained in the interest of better, safer, more economical transportation and is yours without obligation.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY . . . ELYRIA, OHIO

Bendix-Westinghouse

AIR BRAKES

AND PNEUMATIC CONTROL DEVICES

IT IS SIGNIFICANT THAT AMERICA'S FINEST MOTOR TRUCK FLEETS ARE EQUIPPED WITH BENDIX-WESTINGHOUSE AIR BRAKES

ONE of the first requisites of preventive maintenance is a place to do the work.

HOW to ADAPT a "P.M." PLAN

(NAVY's TRUCK FLEET PERSONNEL DEVISE "CUSTOM-

IF you have not as yet found a "standard" preventive maintenance plan to fully meet your needs, you'll benefit from this story which tells how the Navy's fleet turned a standard system into a "custom-built" plan which "tailors" each P.M. inspection to the job.—Editor.

MANY articles are currently appearing in automotive trade magazines, covering the subject of civilian automotive fleet maintenance and also several on the Army procedure. Little, however, has been written on how the Navy is maintaining its automotive fleets. Usually people will associate the Navy with water transportation only, but the Navy operates many truck fleets, too. In this article the author will attempt to present a maintenance picture of a typical Navy home-based automotive vehicle fleet. The accent is, of course, on preventive maintenance, and the system now used by this branch of the Navy.

The Boston Navy Yard Transportation Department operates and maintains a fleet of 326 vehicles and 70 semi-trailers. The fleet is highly diversified, both as to make, model and type. It consists of the products of 24 manufacturers, 102 models and nearly all body types, including fire apparatus, tractors, ambulances, buses, dumps, platforms, vans, sedans, station wagons, etc. It is maintained on a preventive maintenance basis.

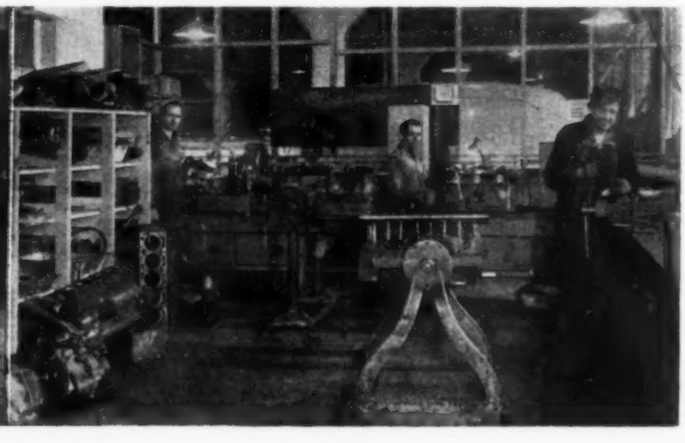
Much has been written on preventive maintenance and many systems have been advocated. It is the writer's opinion and experience that some good can be had from any and all of the recommended procedures. To obtain the full benefit of this practice, however, it is desirable that the ideas and suggestions offered by these programs be made applicable to the particular fleet to be so serviced. I do not believe that any predetermined system of P.M. can be wholly successful, unless it has been streamlined to fit the operation.

Often the P.M. plan does not give entire satisfaction because it has not been adapted and changed to permit smooth operation with regard to personnel, repair shop space, location and other limitations. These known limitations must be given full consideration, if the P.M. plan is to operate successfully.

One important limitation can be the lack of proper cooperation between the operating and maintenance departments. Operational departments are always in need of the vehicles and would certainly like to see them running all of the time with no necessity of tie-up for maintenance, if possible. Until that distant day arrives when maintenance personnel can make

THE wheel alignment equipment is used principally for P.M. work.

THE engine department gets the little jobs that have become big.



THIS garage interior is spacious, intelligently laid out and properly lighted.

to WORK in YOUR OWN FLEET

BUILT" P.M. SYSTEM THAT REALLY DOES THE JOB)

By C. T. Leander,
Quarterman-Machinist,
Transportation Department,
U. S. Navy Yard, Boston, Mass.

repairs, etc., while the operating department is using the vehicle on the road, the maintenance man will have to accept such humor as their conversion of P.M. to "Prevent Movement" and "Post Mortem", with a smile and good nature. Their problems must be appreciated and given full consideration when the decisions are made as to when, where and how the P.M.'s are to be performed.

The P.M. forms, data, hours of work, percentage of personnel on the three different shifts, etc., at present in effect at this point are the results of 10 months of trial during which time numerous adaptations and changes were made. The continuity of the work as shown on the P.M. Work Sheet (which is reproduced with this article) as well as the items covered, is the result of experience gained by a study of over 4,000 P.M. jobs performed in our shop. It was changed from time to time to allow the mechanic to produce high-grade work consistent with reasonable time limits.

A study of over 8,000 jobs covering all types of repairs produced the information as to what points should be covered. This P.M. coverage, therefore, has been custom-built for our particular operation and is now producing excellent results.

Vehicles come in for service on the 30-day or 1,000-miles-of-operation basis. Vehicles showing 1,000 miles of operation are considered due for a full P.M., as noted on the work sheet. Vehicles showing less mileage are given what is termed an "Abbreviated P.M." Complete inspection in either case is given to the vehicle. Competent and careful inspection when the vehicle is received for P.M. work is considered highly important.

The inspector receiving the vehicle writes up the job order and guides it into the type of P.M. work it eventually receives, plus any additional work as noted by the inspector during test or from information received from the vehicle's operator. All concerned with the repair work can refer to the vehicle record of past repairs, should it be indicated. With the exception of wheel repacks, Ford distributor changes, etc., little work is done on the mileage basis, but it is done on the basis of information obtained from each P.M. work sheet.

(Please turn to page 68)

THIS is called the "clutch shop"; note also the engine equipment.

NO caption is needed for this picture; the Navy conserves, too!

We have found, with many makes and models to service, that the service data necessary for a mechanic to do the P.M. operation, has to be available with a minimum loss of time. Inspectors have therefore been furnished with comprehensive easy-to-find listing of all needed data. The inspector inserts the data pertinent to the vehicle at the time the job is made up. Certain standards have been set and should a fuel-pump, battery, engine, etc., fall below these on a P.M. job, the shop foreman is advised and additional work items are added as needed.

As can be seen from the work sheet, mechanics are expected to place their number against any operation they have completed. We have found that the mechanics, through this method of check, take pride in seeing that the job is done right and it also encourages further inspection of all parts of the vehicle while the work is progressing.

Service parts and tools are centrally located in the shop. Special tools are checked in and out of the stockroom, where they are accessible for quick delivery to the men.

Our P.M. procedure instructions have been put into mimeographed form and each employee receives a copy for his guidance. This is particularly helpful to new men and trainees. Meetings are held periodically where, for a short time, the progress of our P.M. plan is discussed. Operational as well as maintenance problems are discussed and means for overcoming any difficulty is settled. This tends to give each man in the shop a sense of responsibility and interest in the maintenance of the entire fleet.

BOSTON NAVY YARD AUTOMOTIVE PREVENTATIVE MAINTENANCE WORK SHEET — Mech. No.

		Mech. No.
1	Check Speedometer Operation	291
2	Check Instruments: Ammeter, Heat Indicator, etc	80v
3	Check Windshield Wiper Operation	80v
4	Check Starter operation	80v
5	Check Fire Extinguisher	80v
6	Bring Engine up to Operating Temperature	80v
7	Clean, Check and set Spark Plugs — Gap .025" — Plug Type F 40F	80v
8	Check Compression 4-cells: 1/100 3/100 3/100 1/100 5/100 3/100	80v
9	Clean and Adjust Distributor Points .020 — Checked Installed new	80v
10	Check Timing—Reset if necessary	291 OK
11	Check all Gasoline Connections and Tighten	80v
12	Remove Air Cleaner, Wash, Re-oil and Replace	80v
13	Clean Fuel Pump and Carburetor Strainers — Test Fuel Pump — Press 3½ lbs. @	80v
14	Check all Water Connections for Leaks and remedy	80v
15	Check Carburetor Choke Operation	80v
16	Check Cylinder Head, Manifolds and Carburetor Nuts—Minor Adj.	80v
17	Check and Adjust Tappets — Intake .012 H — Exhaust .015 H	80v
18	Tighten Exhaust Line Nuts	80v
19	Check Carburetor Adjustment	80v
20	Check Oil Pressure—Max. 40 — Min. — Check Oil Lines and Connection — 35	80v
21	Check Oil Filter and Element, Renew if Necessary — Clean	80v
22	Check Fan, Generator and Compressor Belt Adjustment — Note Condition	80v
23	Check Service Brake, and Brake Fluid Level. Bleed lines if Air Brakes — Air	80v
24	Check Parking Brake	80v
25	Check Clutch Pedal Play—Adjust to 1" in free play	80v
26	Check Front Wheel Bearing Adjustment — Report on King Pin Wear — Good	80v
27	Check Steering Gear—Adjust if necessary — Adj	80v
28	Tighten front and rear U Bolts—Check Springs and Shackles	80v
29	Tighten Body and Cab Bolts	80v
30	Check Universal Joints for wear	80v
31	Tighten Rear Axle Housing all over	80v
32	Check Wheel Alignment — Toe-in 1/16 in. — on machine	811
33	Check Rear Axle Shaft Nuts	80v
34	Check Battery Water and Connections. Use Hydrometer — 1300 1300 1300	80v
35	Check all Electrical Connections, Horn, Lights, etc.	80v
36	Adjust Drive Chains. Check Lubricators	None
37	Check Anti-freeze Solution for coverage to 20 degrees — below Zero — -20	80v
38	Check Engine R.P.M. — Set Gove to — R.P.M.	OK
39	Free up and Lubricate Pintle Hook	None
40	Wash Car—Clean Windows and Windshield—Sweep out Cab, etc	706
41	Inspect Fifth Wheel	None
42	Road Test	291
	TIRES	
1	Check Condition of Tires—Include Spare — OK	74v
2	Inflate Tires — Front 70 Lbs. — Rear 70 Lbs.	74v
3	Tighten Rim or Wheel Nuts	74v
4	Check Valve Caps	74v
	LUBRICATION	
1	Change Motor Oil—S.A.E. 30 — 976 — 5 Lubricate Chassis	976
2	Check Transmission Gear Lubricant — 976 — 6 Lubricate Generator	976
3	Check Steering Gear Lubricant — 976 — 7 Check Rear Axle Lubricant	976
4	Check Shock Absorber Fluid — None — 8 Check Hoist Oil — None	

Mileage 76546 — Make GMC — Chassis No. ACW 705 — Order No. 11820

Date Started 7/1/44 — Date Completed 7/1/44 — Inspected Brennan — USN No. 24550

HERE's the P.M. form that has worked out so well. The specifications have been previously written in by the chief inspector.

BOSTON NAVY YARD

TRAILER PREVENTIVE MAINTENANCE WORK SHEET

		Mech. No.
1.	Repack wheel bearings	782
2.	Report on condition of brake drums — Good	782
3.	Report on condition of brake linings — Good	782
4.	Oil and free up all brake linkage	782
5.	Bleed air reservoir	782
6.	Adjust brakes	782-382
7.	Check brake detachable hose connections	782
8.	Tighten radius rod ends	382
9.	Tighten spring clips	382
10.	Check wiring — See Below	782
11.	Check lights — "	782
12.	Check 5th wheel upper pin	782
13.	Check landing gear axle	782
14.	Test brakes	782-382
15.	Test trailer	782-382
16.	Additional work — Re-wire thru job as necessary for use as overland trailer. --Renew all broken clearance light lenses.	782
	LUBRICATION	
1.	Lubricate trailer	382
	TIRES	
1.	Check condition of tires — OK	742
2.	Inflate tires 70 Lbs.	382
3.	Tighten wheel nuts	382
4.	Check valve caps	382

Make Fruehauf — Chassis No. — Order No. 11820

Date started 7/1/44 — Date completed 7/1/44 — Inspected Griffith — USN No. 63

AND here's the P.M. form for trailers—one of the very few that we've seen to be designed specifically for semi or full trailers.

It might be mentioned here that a large portion of the procedure, forms, etc., were the result of suggestions received from the men at these get-togethers. Manufacturers are frequently invited to show maintenance films covering their particular units and these have also been instrumental in driving home the point of "maintenance", rather than replacement.

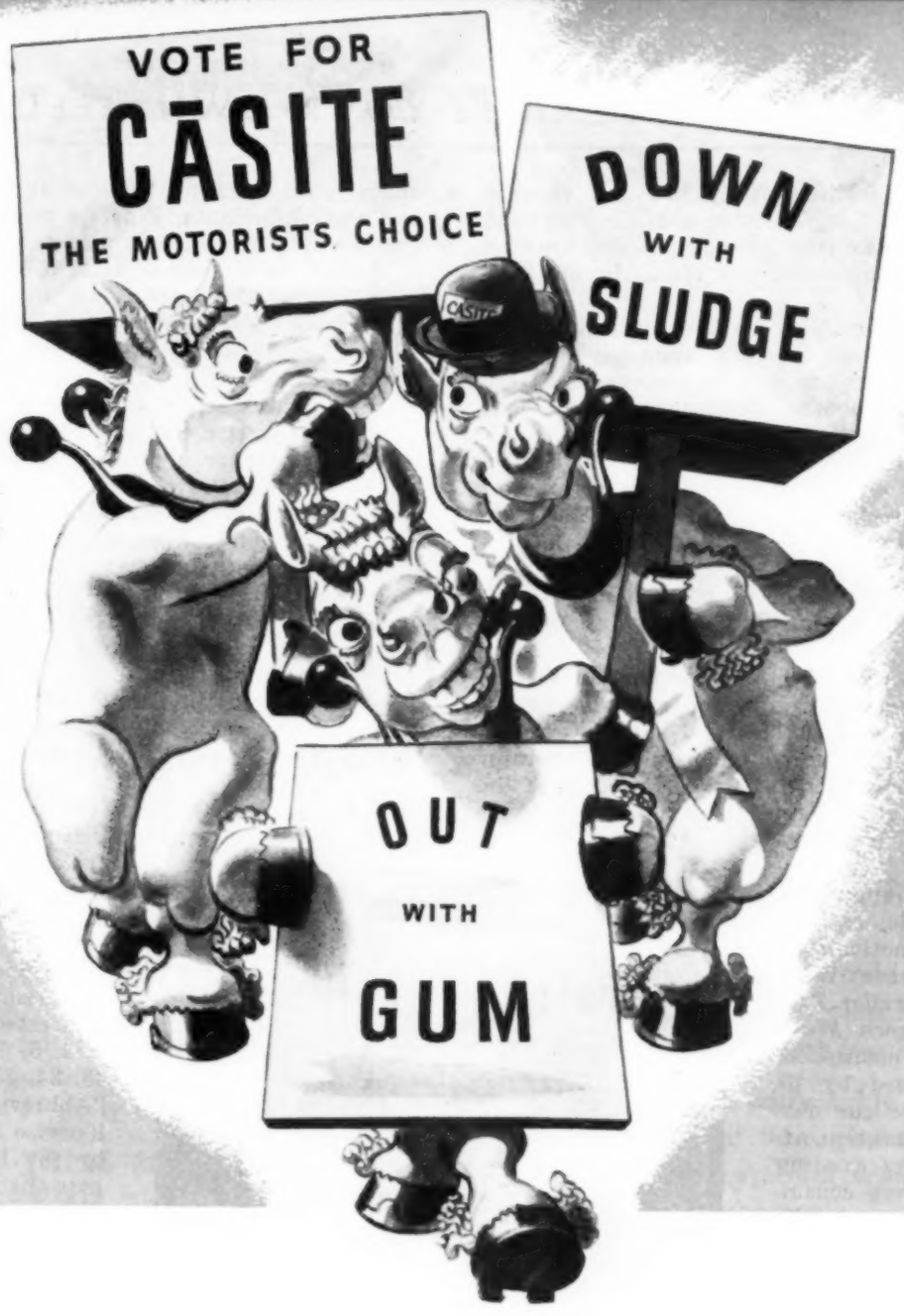
Our shop is well lighted and kept clean. In order to do the work called for on the P.M. work sheet, it is necessary to run the engines indoors, so a system of exhaust to the open air was installed.

Besides preventive maintenance work, all major repairs are also made in our shop. For this work the shop has been sectionalized to cover engine overhaul, clutch and transmission, tires, electrical and carburetion, front-end correction, radiators, trailers, washstand, lubrication, sheet metal and repaint. To break the monotony of doing P.M. jobs, the same mechanics remove engines, radiators, clutches, etc., when this work is indicated, and also reinstall them.

Special work such as tire sectional repairs, as well as inspection of rolling rubber, is handled entirely by our tire department personnel. Tire pressures are checked daily by the vehicle operators and weekly by our tire department personnel. At each P.M. period they are again inspected for inflation, condition, etc., and are removed if the condition so indicates. All tire repairs, with the exception of curing, are handled in the shop.

Engines removed are overhauled by mechanics attached to the engine overhaul section who then run them in, correcting all oil or water leaks, etc., before turning them back to the shop. Front-ends are checked for toe-in on each P.M. and on the correction

(*Please turn to page* 70)



● Running on a platform of economy and proven performance, Casite is the outstanding favorite.

A clean engine runs better and lasts longer. Casite is keeping thousands of truck engines clean and free-running.

Casite also improves lubrication in two ways: First, it cleans out the oil passages; second, it carries the oil to close-tolerance places.

Use Casite and results will speak for themselves: fast winter starts, restored motor efficiency.

Cut operating costs . . . use Casite and keep your fleet on the road during the frosty days ahead.

THE CASITE CORPORATION • HASTINGS, MICHIGAN

CĀSITE

CLEANS OUT MOTORS
KEEPS MOTORS CLEAN

★ IT'S A PRIVILEGE TO BUY WAR BONDS ★

machine every six months. They are also checked whenever tire inspection indicates possible front-end misalignment. The steering knuckle pin and bushing condition is, of course, checked regularly on P.M. Item No. 26.

As our trailer operation is fully automatic, the tractor fifth-wheels are checked regularly by the trailer maintenance section and all trailers are given a P.M. check every 4 months. Trailer tires are checked the same as on the powered vehicles.

Our work week consists of 54 hours and the percentage of employees on the three shifts is as follows: day—75%, evening—20%, and nights—5%. The stagger system for time off is used, with 90% of the force working Sunday, when a minimum amount of equipment is in service, thereby allowing us to complete tire checks and other work with a minimum loss of time.

With the exception of the Transportation Officer, our entire maintenance organization consists of civilian employees and our problems of manpower, etc., are similar to every other automotive fleet operator in wartime. We have lost men to all branches of the Armed Forces and have replacement parts problems similar to those in many civilian fleets.

Two forms are reproduced within this article, namely, the regular Automotive Preventive Maintenance Work Sheet, and the Trailer Preventive Maintenance Work Sheet. As before mentioned, these were devised by us (custom-built) for our own particular fleet operation, after studying many existing systems and holding consultations with the men who were actually going to do the P.M. work.

The form illustrated on page 68 is the standard procedure for the GMC truck which it covers. From data sheets showing all important service specifications covering every vehicle in our fleet, the inspector first "prepares" the form, writing in such specifications as spark plug type and gap, distributor-point setting, valve-tappet clearance, clutch-pedal play, toe-in specification, etc. This gives the P.M. mechanic something to check against. We have felt that altogether too many P.M. systems include the word "Check", but leave the mechanic out in the cold when it comes to knowing just what to check against.

The inspector, basing his decision on the previous P.M. record, also writes in whether motor oil is to be changed or checked; likewise transmission, rear-end and other lubricants. Where a vehicle does not require the checking of a certain part or unit—either because it doesn't have such a unit, or because checking is unnecessary—the inspector eliminates that from the P.M. sheet. From this you will see that our P.M. form is really a "tailored" form for each vehicle, by the time it reaches the P.M. mechanic. And, as the mechanic checks each item or otherwise performs the required operation, he places his number alongside of it—mute evidence of responsibility for the job!

The Trailer Preventive Maintenance Work Sheet will be found of unusual interest to many operators, your Editor tells me, because a lot of fleet men usually don't bother with trailer P.M. on any definite system. This form, likewise, is first "tailorized" for the individual trailer which it will cover. Such a "custom-built" system, we have found, makes the mechanics take more interest in their work, since they feel that they are actually performing an intelligent operation, rather than simply automatically checking a lot of things printed on a sheet of paper.

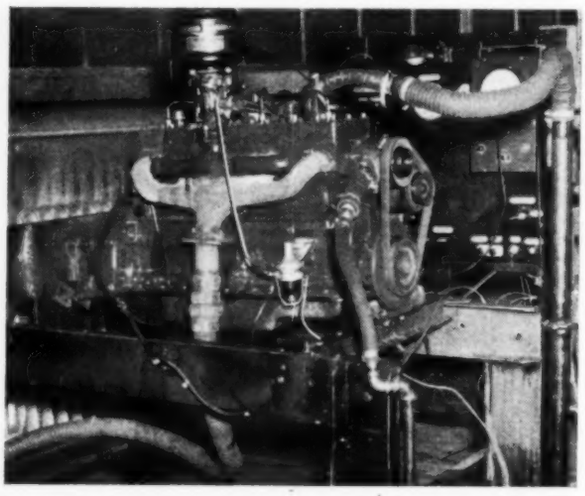
We have previously mentioned that vehicles showing less than 1,000 miles of operation since the last P.M., are given what we call an "Abbreviated P.M." . . . This operation utilizes the regular P.M. Work Sheet shown in this article, but it includes only the following items, in case you are interested: Numbers 1, 2, 3, 4, 5, 7, 9, 14, 21, 23, 24, 25, 34, 35, 37 and 42. This "Abbreviated P.M." form is likewise made up in advance by the Inspector. You will note that it eliminates many items, which are not considered necessary at low-mileage intervals. To simplify matters, we could have printed a separate form for this operation, but in the interests of paper and manpower conservation, we have decided to use the large form. This also enables us to include other items, which the initial inspection (or the driver's report) reveal to be needed.

In conjunction with these two forms, we also use a regular "Job Ticket", containing a description of the work to be done, the mechanic's time, number, etc. On the back of this form there is space for listing the parts and material used, which is later sent to the office for accounting purposes. This is similar to those used in many fleet operations.

In conclusion, we feel that every effort is being put

(*Please turn to page* 140)

DON'T you wish you were turned loose in a shop having a nice, big tool-board like this one; or is yours as complete?



IF you've often yearned for an engine run-in stand, here's one that you can make up quite easily, from scrap materials.

For Forty Years a Dream

TODAY MARKS the introduction of the most important advance in tire making since America's synthetic rubber program was launched.

For 40 years—ever since the rubber industry learned that mixing carbon black with rubber would make tires wear longer—chemists have dreamed of some method of doing this mixing while the rubber was still in latex (liquid) form.

To make this dream come true The General Tire & Rubber Company assigned its large corps of scientists to intensive research. It entered into agreement with the chemists of Carnegie Tech and Purdue Universities. It expanded its own research staff by the addition of many experienced scientists.

AND THESE SCIENTISTS CAME THROUGH

The long sought method was found and the result is being introduced to the public today.

It means to the average motorist that he will get better tires sooner. It means to the truck owner that the critical transportation problem confronting him will be greatly eased.

It is a great contribution to the rubber industry . . . and because it is so important General is turning over this scientific secret of compounding to all competitive companies . . . and thus every tire user will be benefited.

In its government-owned synthetic plant at Baytown, Texas . . . General Tire now is mixing carbon black with synthetic rubber in liquid stage.

America can look forward to a substantial increase in the number of synthetic tires produced . . . and to a better tire . . . because:

. . . milling time is reduced one-third

. . . consumption of essential power is reduced 20%

. . . manpower needed for milling is reduced sharply, with men freed to operate tire building machines

. . . mileage-adding carbon black is evenly dispersed throughout the rubber . . . giving equal wearing qualities everywhere.

SO IMPORTANT IS THIS new development that highest priorities were granted to permit immediate production. Millions of pounds of this new rubber will be produced by General Tire at Baytown.

THE DREAM OF RUBBER CHEMISTS has come true. Great new avenues of research have been opened. From this beginning, new processes . . . and better rubbers . . . can be expected in the near future.

THE GENERAL TIRE & RUBBER CO.

AKRON, OHIO • WABASH, INDIANA • HUNTINGTON, W. VIRGINIA
BAYTOWN, TEXAS • BARNESVILLE, GEORGIA • WACO, TEXAS

NEW drivers should be acquainted with mechanical details of trucks.

PLANNING NOW for

HERE's A PRACTICAL SAFETY PROGRAM THAT

FOR safe operation of any truck fleet, certain minimum driving standards must be achieved and maintained. In this article the author offers a practical, workable plan for pre-testing and training drivers. . . . If followed, it should result in accident-free truck operation.

SAFE operation of trucks depends primarily upon safe drivers; safe drivers are generally found where there are efficient, sustained safety programs.

Kaleidoscopic changes in methods of achieving general safety are taking place, so that it is timely to consider the future of fleet safety programs. Some of the present methods for fleet safety may, from time to time, require re-balancing. Also, fleet safety programs may, in the future, be put to a more severe test.

Consider a program which is running not perfectly, but close to average. If next quarter it is found that expansion or other reasons make it necessary to hire one-third more drivers, is the safe driving program balanced so that the present good record can be maintained? Or assume that next quarter it is necessary to *reduce* the driving force one-third, is the program set up so that interest will be sustained?

There have been two schools of thought on fleet safety work. About 1930, certain fleet safety programs were promulgated which were thought to be complete. Later studies have proved that in most cases the programs were not as complete as originally hoped. A contrasting point of view is represented by those agencies which have felt that certain cardinal principles of fleet safety were well established, but that many promising refinements of fleet programs would have to be tested on proving grounds before finally being incorporated into a program.

Typical of these refinements are psychological tests, aptitude tests, driver road-vision tests, reaction time tests and a host of other innovations, all holding promise but which need further study. To date, such tests have not indicated as definite correlation as hoped for between scores made and operating ability. While many fleet owners are bold enough to experiment, the majority are conservative and prefer to follow simple and time-tested programs.

There is no apparent rigid safety program to solve all ills for all types of fleets. There are, however, minimum essentials which have been proved practical in building continuous and well-balanced programs and which are known to bring permanent reductions in fleet accident experience.

At the outset any fleet safety program is best undertaken where:

1. *There is sincere interest by management and the responsibility for the program is definitely assigned.*
2. *There is a definite program of selection of personnel and provision is made to upgrade employees by a sustained educational program.*
3. *There is a collection and analysis of accident experience to guide the application of accident prevention work.*
4. *There is a definite program to arouse and sustain interest in the safety program.*

The following minimum essentials for operating trucks have been found successful for large,

PROPER setting of flares and other safety devices should be taught.

TRAINED examiners should always be used in giving drivers road-tests.

POST-WAR SAFETY

YOU CAN USE WHEN LABOR IS AGAIN NORMAL

By E. J. Downing
Fleet Engineer,
American Mutual Liability Insurance Co.,
Boston, Mass.

small or medium sized fleets in any vocation:

Selection of Drivers: A carefully designed application form, to obtain pertinent information about the applicant is essential. The layout of the form need not be elaborate, but should be done well enough to impress the applicant as an important part of the selection process. It should furnish a record of past experience, references and, most particularly, the past accident record. All data furnished by the applicant, and especially the past accident record, should be verified, preferably by personal contact. In some cases telephone verification or check by letter have proved successful, but some previous employers hestitate to put into writing, or advise by telephone, their honest evaluation of an individual.

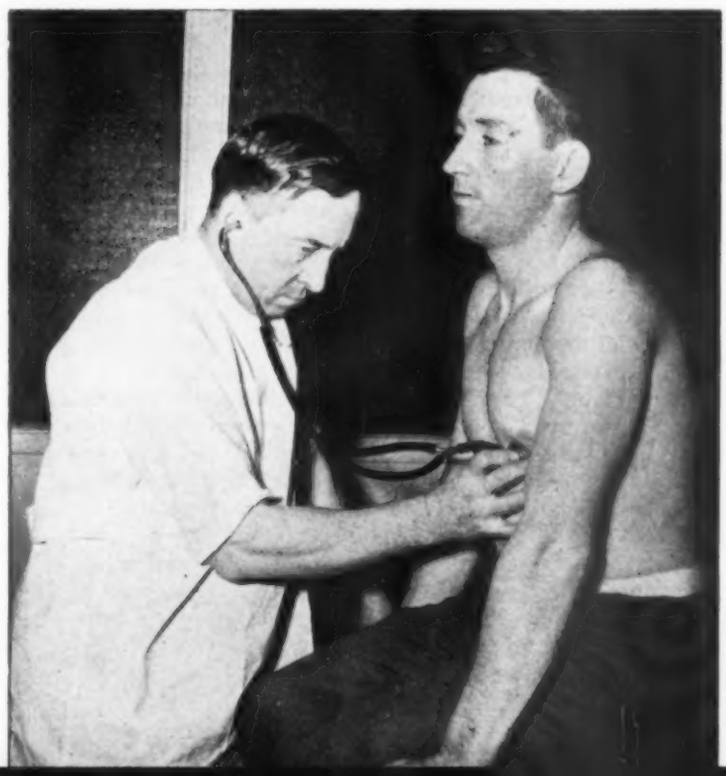
Interview: The interview of each new applicant is most important and should be made where possible by a fleet superintendent or trained examiner. Persons skilled at interviewing are able to learn valuable information regarding an applicant's attitude toward the job and safe driving; home and family life; financial status; hobbies; and general personality characteristics.

In addition, the interviewer can determine if the applicant has any objections to taking written or road tests, provided he is selected for further consideration. If preferred, the written tests can be given at the time of the interview. Such tests should cover knowledge of the laws and traffic regulations for the section in which the applicant will operate, and general good driving practices. It is also desirable that the applicant be required to show chauffeur's and other licenses required in the areas where he has been operating.

Driver Road Tests: Another valuable check is to have the applicant pass a road test, particularly the driver who has had limited experience. It has been suggested by some fleet safety workers that certain applicants may, under the pressure of such a test, become somewhat more erratic than when not under scrutiny, but that a skilled observer can discount for this condition. It is preferable that a trained examiner, if available, give the test. It is essential that the test be conducted over a well planned course, and an objective performance rating sheet should be used for grading.

Medical Examination: A medical examination especially designed to meet driver requirements should be given, since it is obvious that poor eyes, sub-standard hearing, poor heart or other deficiencies will be a handicap to his becoming a first-class driver. In the absence of such an examination, the interviewer should ascertain all apparent physical deficiencies and consider whether or not they can be corrected. Although some fleet operations can be satisfied with drivers selected without physical examination, it should be noted that fleets subject to the supervision of the Interstate Commerce Commission are required to employ drivers who are cer-

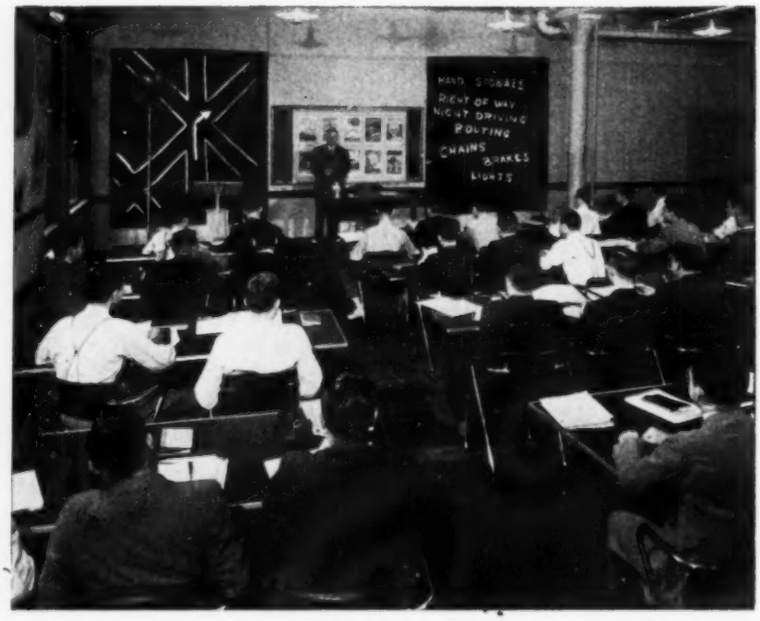
MEDICAL examinations should be a "must" with every new truck driver.



tified by a physician as physically standard.

There will be applicants whose below-standard physical rating is correctable, such as vision below par being made acceptable when proper glasses are worn. It is considered the better practice to encourage such applicants to correct defects, and not lose an otherwise suitable employee.

Men for Advancement: Drivers should be selected who apparently possess the capabilities to advance in the organization. This quality, however, requires careful consideration. There are studies on record indicating that highly educated persons do not necessarily make good drivers. General fitness for the work is a more important factor than high intelligence. In short, adaptability to the job of driving depends upon interest, emotional stability and social attitudes, as well as intelligence.



SAFETY meetings are also a "must" in every fleet safety program. . . . These meetings are most effective when conducted by a trained consultant, or by some expert driver who has a flair for such leadership.

In this connection, the driving experience must be appraised carefully. It is the experience of some managers of growing fleets, especially bus fleets, that they get the best results by building the drivers from raw material. In the case of closed shop operations, men of seasoned driving ability are needed. It is recommended that salesmen and canvassers be *not* selected for their prospective salesmanship only, but driving aptitude and safety outlook should be requisites for selection.

Training on the Job: All new drivers, whether newly-hired or recruited from helpers, should drive for a period under supervision of an expert driver. The general practice recommended is two or three trips with a regular driver. This also applies in the case of a newly hired driver, whose experience indicates he is expert.

The supervising driver can be charged with the responsibility of furnishing special instructions on the peculiarities of the job; safety hints in connection with handling materials; routing to avoid unfavorable traffic situations; company or local regulations requiring placing of a lookout when backing; peculiarities of the type of equipment being used; in short, instructing the new driver in the best of the accumulated driving experiences developed by the company.

Special Booklets: During the preliminary period of training on the job, valuable instructions can be furnished the driver by providing him with special hints on expert driving in the form of booklets, such as a driver's manual. These may be National Safety Council publications or insurance carrier booklets.

Reporting Mechanical Defects: Of paramount importance, from both the safety and operating cost standpoint, is training the employee to look for and report mechanical defects of his unit. This is supplementary to any regular system of inspection and repair under the jurisdiction of the maintenance department. Most fleets have found it advantageous to use a standard form for such reporting. The value of such forms depends upon the follow-through by management on the items reported. The form prescribed by Interstate Commerce Commission is also quite adaptable to vehicles not under their jurisdiction.

Reporting Accidents: How to report on accidents and what to do in emergencies constitute another training problem.

The driver should be carefully instructed so that in case of accident he can conduct himself in such a way that both he and the company will avoid being prosecuted unjustly for law violations, and so that fraudulent claims can be eliminated. Many times further damage and fraudulent claims can be prevented by the driver's taking decisive, intelligent action.

Typical of these preventive measures are: turning off ignition; placing fusees or flares; aiding the injured, including recording full data about them; extinguishing fires; informing the police, the company and nearest claim office of the insurance carrier; reporting and sketching the accident completely. Much confusion of the driver can be avoided if he has been previously instructed in the use of all accident forms and reports which he is expected to fill out at the scene of the accident.

Each driver should be instructed on I. C. C. and additional regulations resulting from legislation in effect in the locality in which he operates.

Upgrading the Driver: Extended training is just as important for a balanced fleet program as is pretraining. While an occasional safety meeting may prove valuable, a fleet program to sustain interest should provide for constant safety education.

Conference Leadership Meetings: One of the successful means of up-grading is active driver participation in conference leadership type of meetings. These meetings are most effective when dynamically led by a trained consultant, or an expert driver who has a flair for such leadership, and where the following methods are adopted. An outline for the meeting should be prepared in advance and typed or mimeographed sheets furnished (*Please turn to page* 150)

Putting fighters in fighting trim...

OFFICIAL U. S. NAVY PHOTO

Service for Internationals at a South Pacific Base

PLENTY of fresh air here, where servicemen of the 33rd Construction Battalion of the Seabees put fighting trucks in fighting trim. This maintenance shop isn't much like an International service station at home, but the men, tools and work are America's own—skilled representatives of America's might.

International Trucks with the Seabees, like Internationals everywhere, are all-truck trucks. Every part and fitting is made for one purpose—stalwart truck performance. These trucks are brothers under the hood of the International Half-Tracks that are fighting on foreign fronts, powered with the same famous International Red Diamond Engines.

International Trucks are rugged. Their stamina and dependability at war and at home explain why—in the 10 years before the war—more heavy-duty International Trucks were sold than any other make.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL *Trucks* HARVESTER

New Trucks—Now! The government has authorized the manufacture of a limited quantity of trucks for essential civilian hauling. International is building them in medium-duty and heavy-duty sizes. See your International Dealer or Branch now and get valuable help in making out your application. Don't delay!

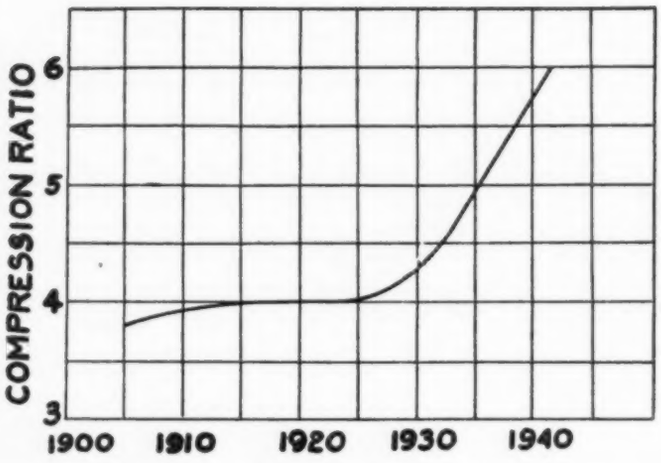


FIG. 1—Compression Ratio Changes—1905-1940

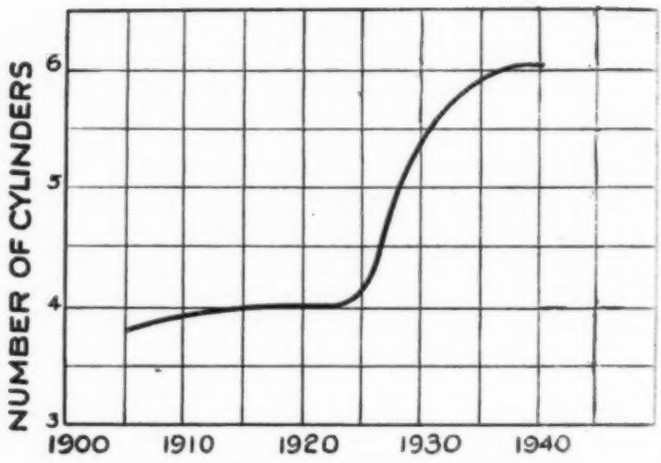


FIG. 2—Average Number of Cylinders—1905-1940

WHAT ENGINES FOR

THE possibilities of gasoline engine development are discussed thoroughly in this interesting article, presented originally before the SAE's recent West Coast Transportation & Maintenance Meeting.—Editor.

IN attempting to forecast the things which we may expect in the future gasoline engine, one must first recognize that the gasoline engine is a *heat* engine, and that it is only through increased thermal and mechanical efficiency that we may expect to extract more actual foot-pounds of work from each dollar's worth of fuel. In presenting a paper of this type, perhaps it would be best to review a bit of the past history of commercial truck and bus engines, with regard to compression ratios, average rpm at peak horsepower, pounds per brake horsepower, and average displacement.

In Figure 1 we can see that engine compression ratios from approximately 1905 to 1925 stayed constant at 3½ or 4 to 1. At that time (1925) a comparatively rapid increase in compression ratio started to take place, and these averaged, as of 1940, approximately 6 to 1.

In Figure 2 is shown that for the same period, that is, up to 1925, the average engine in a commercial vehicle had four cylinders; and in the next ten years there was a rather rapid swing to six cylinders.

In Figure 3 we show that over this same period of years the engine weight in pounds per brake horsepower output has gradually decreased from approximately 35 pounds in 1905 to a little less than 10 pounds in 1940.

Figure 5 shows that the average road speed at which commercial vehicles have been governed has increased in a rather smooth curve from approximately 9 miles per hour to today's 50 plus miles per hour.

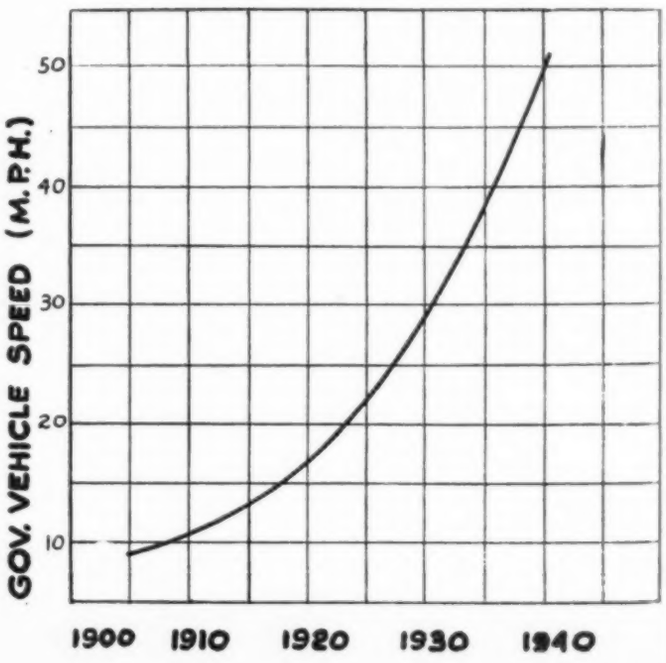
In Figure 7 the displacement of the average commercial engine has in the meantime decreased from about 380 cubic inches to approximately 330 cubic inches; and despite this decrease in displacement, the horsepower outputs shown in Figure 6 have increased about six times to a point where the average engine is very closely approaching 100 horsepower.

In Figure 4 you will note that the governed rpm has increased meanwhile from 1,000 rpm to 3,000 rpm. All of the above figures and charts were obtained by analysis of data appearing in trade journals over this period of years.

If we project these same curves on into the future, with approximately the same rate of change, we will arrive at horsepower, speeds and weight per horsepower which, at first glance, appears to be a rather fair improvement. We believe, however, that we cannot just project them at the same rate of increase, for during the past few years under war-time stress we have made progress at a considerably faster pace than in normal peace times.

Our consideration of the engine of the future must be based on the fuels available as well as on materials which we will have available at that time. There have been remarkable improvements in gasoline and oil technology, as we all know, forced upon us by re-

FIG. 5—Average Truck Road Speed—1905-1940



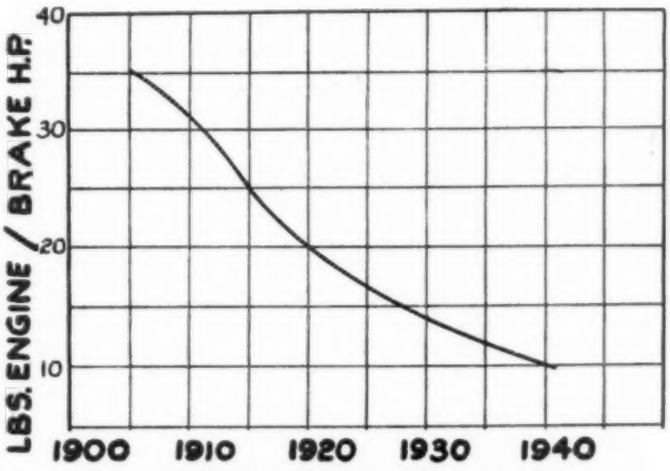


FIG. 3—Engine Weight, lb. per b.h.p.—1905-1940

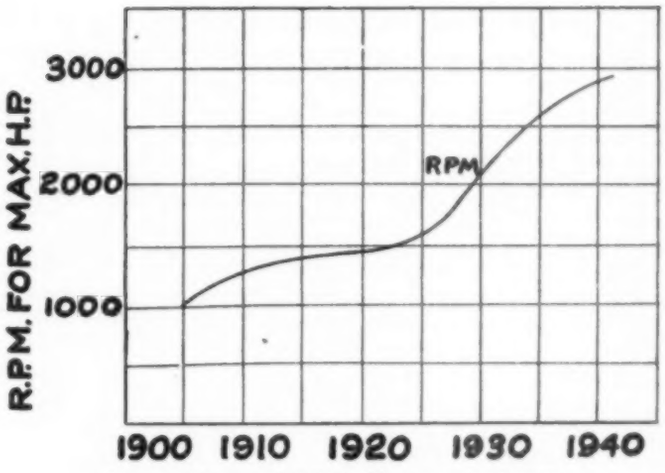


FIG. 4—Governed R.P.M. Changes—1905-1940

POST-WAR TRUCKS?

By Forest S. Baster,

Vice-Pres. in Charge of Engineering,
White Motor Co., Cleveland, O.

quirements for higher and higher outputs for combat aircraft. For this engine of the future we believe that the non-premium gasoline will be at least 90-octane and the lighter alloys (aluminum and magnesium) will be priced competitively with cast iron. This 90-octane fuel will be far superior in *road* performance to the 87- to 90-octane fuel which was available before the war as aircraft gasoline.

It has been found that the octane rating arrived at by the ASTM or so-called motor method, or by the CFR—Research Method, does not give a true indication of the performance of gasoline on the road. For some time we believed that a combination of these two methods or the sensitivity as it was called, gave comparatively good correlation with road performance but recently the CFR road testing has developed the fact that some gasolines, even though rated the same by each of the two methods, gave quite different performance upon the road.

During the past few years oil technologists have succeeded in building gasolines practically to order. Figure 8 shows the curves of three different gasolines all with the same ASTM octane-number and two of them with the same CFR octane-number. The normally aspirated engine has an octane requirement shown by the dot-and-dash line, decreasing as engine speed is increased. As can be seen from the chart, gasoline "B" with an 80 rating by ASTM and CFR will be of too low a quality for speeds below 1,800 rpm. Gasoline "A" does somewhat approach the typical slope, whereas, gasoline "C", with the same rating by ASTM and CFR methods, shows that it would be possible to increase the compression ratio of the engine were the manufacturer certain that no other gasoline other than those similar to "C" were ever going to be used in that engine.

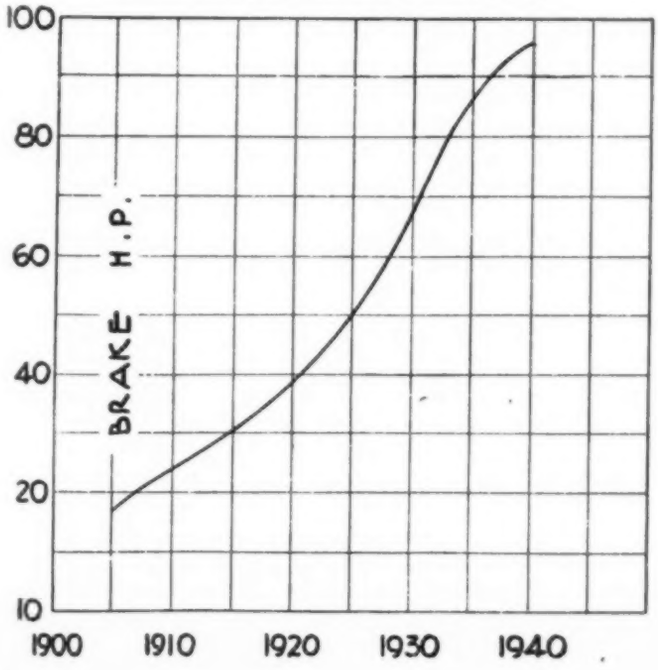
Now let us look into the crystal ball and see what the future holds for us. Engines will, in all probability, be no smaller physically than those now in use, but will have considerably higher output. In the not too distant future it is easily conceivable that we shall have engines developing 165 bmep unsupercharged, and 200 bmep supercharged, with .55 to .6 horsepower per cubic inch in the normally-aspirated engine and even more in the supercharged version.

Perhaps this seems to be shooting for a star, but you may remember that a paper given in New York in November, 1938 forecast 125 bmep and at the moment that seemed audacious, but within a year that goal had been surpassed. There is today an engine which is developing over 140 bmep with 80-octane fuel, so we are well along the way and this forecast of 165 bmep may also prove to be too conservative.

The cost of these engines will be lower when measured in dollars per horsepower, even though the dollars per cubic inch of displacement may rise, due to better

(*Please turn to page* 78)

FIG. 6—Yearly Increase in Power—1905-1940



quality of materials which in turn contribute to longer life and lowered maintenance.

These higher outputs will be needed for, after the close of hostilities, this nation will undoubtedly have an era of road building which will produce main intersectional and transcontinental roads which will permit high speeds and this in turn may lead to legislation as to minimum speeds which must be maintained even on the upgrade. This minimum speed will be such that more and more power will be needed and we manufacturers will supply it. In order to do this, we will undoubtedly have to take full advantage of the fuel and completely redesign our engines to use most advantageously the fuels we believe will be available.

Fuels alone should allow 10% to 15% increase in output with very little change, other than that we put in high-compression pistons or shave a little off the head. There are quite a number of ways in which additional performance can be obtained, some of which may appear at the moment to be "gadetry" but with further intelligent engineering development some of these may become quite the acceptable thing.

With the increase in compression ratios, for instance, spark timing will perhaps become much more exact than that given by our present-day distributors with their rather wide tolerances as built in today's production. Distributor points have been a source of a good many headaches for, as the fiber block wears, spark timing on the engine changes and the need for frequent maintenance has been a nuisance. There are at least two and possibly three different ways known at the present time by which these points could be eliminated. These systems would require a few electronic tubes, but this can no longer be considered very much of a hazard, for, in so many of the aircraft wrecks where the plane has been a complete washout, the one piece of equipment that could most frequently be salvaged was the radio and its tubes.

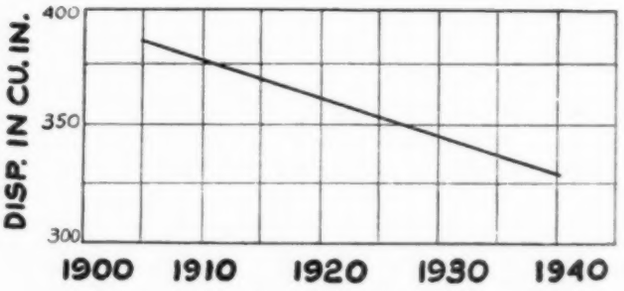


FIG. 7—Avg. cu. in. displacement for same size vehicle.

New ignition systems are being developed which may eliminate the present high tension secondary leads with their accompanying tendency to leak, be subject to corona breakdown and sometimes even crossfire. These new systems use low tension distribution and step up the voltage at the spark plug. With higher pressures at full loads and probably leaner mixtures at full and part load, both new spark plug design and higher impressed voltage on the plug points may be required in order to fire the mixture.

Spark plugs, too, are being developed rather rapidly and progress with electrodes made of platinum and tungsten, some using thorium too, are now in production. These metals and alloys are used to increase the emissivity, or in other words, to more easily surround the points with electrons so that the spark might jump across the gap with a lesser impressed voltage. The mechanical design of the plug is also being improved and plugs will now operate for very much longer periods, even with the heavily-leaded fuels. As an example of this, a small and what might apparently be assumed to be a comparatively unimportant change in electrode positioning and spacing, has given an extension of time between servicing of approximately ten times or 1,000%. Another change permits control of the temperature of the center wire, which has been the hottest part of the plug. With these improvements and others now under development, we may be fairly confident that the spark plug manufacturers will keep pace with anything that the commercial vehicle engine will require.

Bearing materials have been improved tremendously in the past few years under the stress of aircraft development. In today's engines copper-lead bearings are widely used both for main and connecting-rod big ends. In the latter use, the loading is in the vicinity of 1,200 pounds per square inch. These bearings carry manufacturers' ratings of about 3,000 pounds per square inch. Bearing manufacturers are aiming at (and seem to be fairly confident of obtaining) bearings that will handle loads of more than 2,000 pounds per square inch, with the same relative margin between actual and manufacturers' ratings. This manufacturers' rating is made on standard bearing test machines which are used with slight variations by each of the bearing makers. Wear is measured after a given time with the rated load and if the wear falls below a previously established figure the bearing is approved for this rating.

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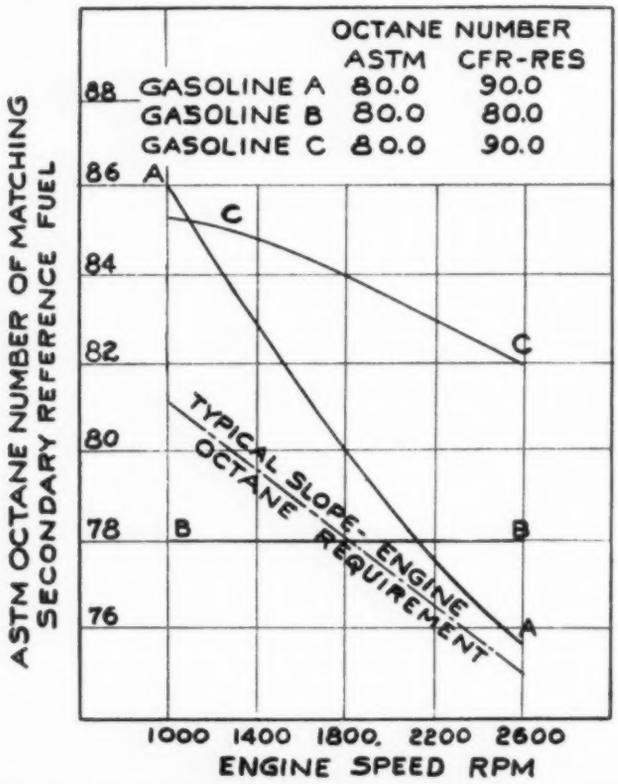

FIG. 8—Variation in octane number with engine speed.

Reach in here for 350,000 Extra Miles

Extra miles . . . extra hours . . . are in this engine because PORUS-KROME* has been applied to the cylinder walls. This is where the greatest wear occurs in engines and PORUS-KROME extends the life of these walls 4 to 20 times.

The ability to resist corrosion is inherent in chromium and is well known. The ability to resist cylinder wear, also, is inherent in this new form of chromium . . . PORUS-KROME . . . and is being demonstrated daily in thousands upon thousands of engines in use by the Army and Navy, and in essential civilian operations.

PORUS-KROME, produced by the Van der Horst process, is different from ordinary chrome because it has tiny open pores and channels in the surface. These pores and channels serve as reservoirs to hold lubricating oil . . . and then feed it back to the cylinder walls as needed. This excellent lubrication reduces wear, scoring and scuffing to a minimum.

Both corrosion and wear . . . those two enemies of long engine life . . . can be defeated at last. You can multiply the cylinder life of your engines 4 to 20 times . . . specify PORUS-KROME in engines you buy.

* PORUS-KROME is pure, hard chromium, applied to cylinder walls and other bearing surfaces by the patented Van der Horst process. It resists corrosion and wear in cylinders better than any known metal. Records prove that it multiplies cylinder life four to twenty times.

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Announcing

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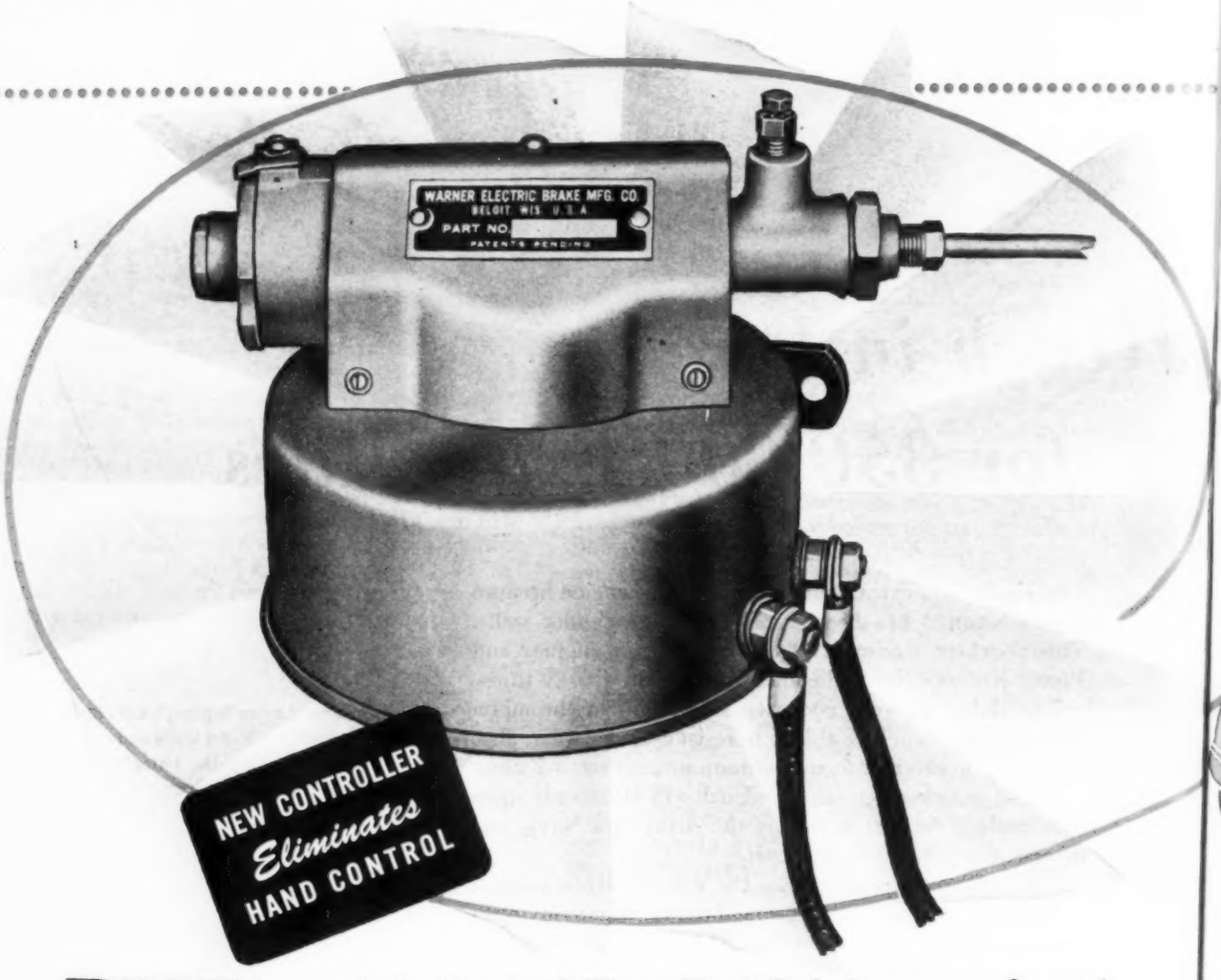
Now INGENIOUS WARNER CONTROLLER -



PERFECTED — *ready for delivery with Warner Electric Brake Systems* — **or** for quick change-over on tractor-trailers now equipped with hydraulic brake and Warner Electric Brake Combinations.

The new Warner Controller — simple and compact — synchronizes the hydraulic brakes on the tractor with the Electric Brakes on the trailer. The tractor's regular foot pedal operates both braking systems. This development creates smooth, foot-touch tractor-trailer braking under all conditions — eases driving strain — assures greater safety.

The new Warner Controller has the same basic simplicity of Warner Electric Brakes themselves — world famous for easy installation, and efficient, trouble-free performance. Get the benefits of this great advancement now. See your Warner dealer about changing over your present equipment. Specify Warner Electric Brakes on all future trailer purchases.

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BRAKE ADVANCEMENT!

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Controller is easily and quickly fitted into the hydraulic brake line.
Only a few flexible wires. Nothing to freeze or chatter . . . No complicated mechanisms.

FOOT PEDAL PRESSURE CONTROLS BRAKES ON *Both* TRACTOR AND TRAILER

WARNER
ELECTRIC BRAKES

SAE-ODT DATA on BOLTS & BUSHINGS

MAINTENANCE METHODS COMMITTEE ISSUES SUGGESTIONS ON THE USE OF REGROUND PINS and BOLTS, TO FIT "OFF-THE-SHELF" BUSHINGS. THIS REPORT SHOULD SERVE AS A "REFRESHER" to FLEET OPERATORS

THE SAE Maintenance Methods Coordinating Committee has prepared a detailed report on Automotive Bolts and Bushings, submitting it to ODT's Vehicle Maintenance Section, as a means to facilitate the maintenance of rolling stock with current limited stocks of replacement parts.

Basically, the idea in this report is to demonstrate to fleet operators and other maintenance men how different sizes and types of bushings can be made to work, where the original part is not available. Covered in the report are such bushings as: Piston Pin Bushings; Steering Knuckle Bushings; Generator, Starter and Distributor Bushings; Spring Bushings and Miscellaneous Bushings. . . . We quote, in part, from the report:

Ranging in size from 7/16 in. I.D. to 3 in. I.D. and .548 O.D. to 3.410 O.D., in most cases, only a minimum of reaming stock is allowed for in "off-the-shelf" bushings, as they are intended for use with new pins or bolts.

The Piston Pin List (included in the report) has been broken down to show manufactured size I.D. and O.D., the approximate assembled I.D. and minimum bolt or pin size. The minimum pin size is the smallest diameter to which the bolt or pin can be ground and fitted into these standard bushings. This does not mean that a smaller diameter pin cannot be used.

A study of the list will show that many other combinations are possible. If a bushing with a smaller I.D. is needed it is quite easy to select a bushing from a list that has the same O.D. but smaller I.D. This will permit the pin to be ground to any desired undersize and the bushing reamed to fit.

If the retainer or housing is worn due to loose bushings in the previous assembly, a bushing of the proper I.D. and larger O.D. may be selected.

Most bushings will collapse or form in the amount of the excess stock on the outside diameter For example a bushing with a 1.003 in. O.D. and .808 I.D. will have an assembled I.D. of approximately .805 in. when pressed into a housing bore 1.000 in. in diameter. In order to obtain these results, extreme care should always be exercised in pressing the bushing into place. If any shearing takes place, or any stock is removed from the O.D. while pressing into place, uniform results cannot be expected.

In order to prevent this, the shoulder or edge of hole into which the bushing is pressed should be carefully chamfered so that a smooth slightly radius edge is created. The bushings will then press in uniformly and tight. Never press bushings into place with excessive stock on the O.D. This excess stock will shear off and the bushings will not be tight in the housing. The metal will not shear off evenly so an eccentric wall bushing will be the result, which will make reaming and fitting in perfect alignment very difficult. Sufficient stock for tight assembly on most standard sized bushings would be .003 in to .005 in.

When a bushing other than standard is selected for reason of O.D. or I.D., it may be impossible to select one of proper length. Obviously a longer bushing can be cut off to proper length. Shorter bushings may be utilized by assembling two or more bushings in the housing.

A bushing that is oversized on the O.D. can be turned or ground to the proper size for pressing into place. Bushings with smaller I.D. may be bored before assembling if there is too much stock to remove by reaming in place.

It would be a rare case where a mechanic with proper information could not choose stock bushings that will permit him to do a successful repair job and keep his fleet on the road. If catalogues of all leading manufacturers are on hand and the jobber source is known, a choice of the material should be quite simple.

Attached to this report are five lists of bushing sizes, which information is basically the same as are found in standard replacement parts catalogs. The five lists cover the following: Piston Pin Bushings; Steering Knuckle Bushings; Spring Bushings; Distributor, Generator and Starter Bushings; and Miscellaneous Bushings. These lists show all sizes currently manufactured and give both the inside and outside diameter. Copies of same are not yet available, but the information may be obtained from any jobber's or vehicle dealer's catalog.

G. I. breakfasts come "sunny-side up" ... *with* DIAMOND T *reliability*

As every enlisted man knows, "G. I. breakfast" means eggs whenever possible—and the Casperson fleet of Diamond T's has sped the collection and transport of countless millions of them for our fighters at the Pacific front.

There are ten of these Diamond T's in the service of O. A. Casperson and Sons, and they have no easy job. Most of their mileage is made on secondary country roads and up and down San Francisco's famous "cable-car" hills . . . there are many stops and starts with heavy trailer loads.

Mr. Casperson writes "We have standardized on Diamond T. In our hard service they give us the dependable performance we must have, with economy of operation. We are looking forward to the day when Victory comes and new trucks are again available, so that we can have more Diamond T's in our fleet."

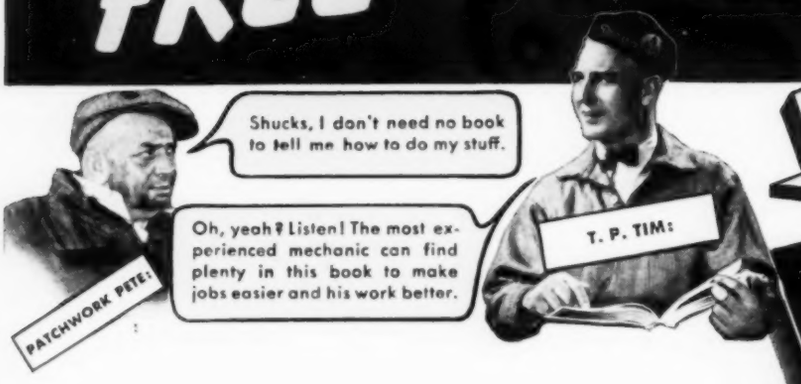
Diamond T has been authorized to build a limited number of new commercial trucks this year. See your Diamond T dealer if your service qualifies for Rationing Board approval.

DIAMOND T MOTOR CAR CO. CHICAGO

Established 1905

DIAMOND T TRUCKS

New "KNOW-HOW" Manual FREE to TP Jobber Customers


Shucks, I don't need no book to tell me how to do my stuff.
PATCHWORK PETE:
Oh, yeah? Listen! The most experienced mechanic can find plenty in this book to make jobs easier and his work better.
T. P. TIM:

THIS remarkable book has been brought out as a most practical solution to the serious problem of repairing and maintaining our country's automotive equipment in war time.

It is primarily written for the thousands of new recruits now in automotive service—the men, and women—who have had limited experience in their new work. Yet expert veteran mechanics will find invaluable information crammed into its pages.

Each section covering engine, power transmission, carburetor, pumps, steering, brakes, chassis, etc., etc., is complete in itself with numerous operations detailed and illustrated. Instructions tell not only how to take out and replace units (a clutch for example) but what to do with the unit when it is on the bench.

Note: This special purpose book is a temporary replacement for the annual 1800 page T.P. Repair and Maintenance Manual, which will again be available after the war when regular production of car models and engines is resumed.

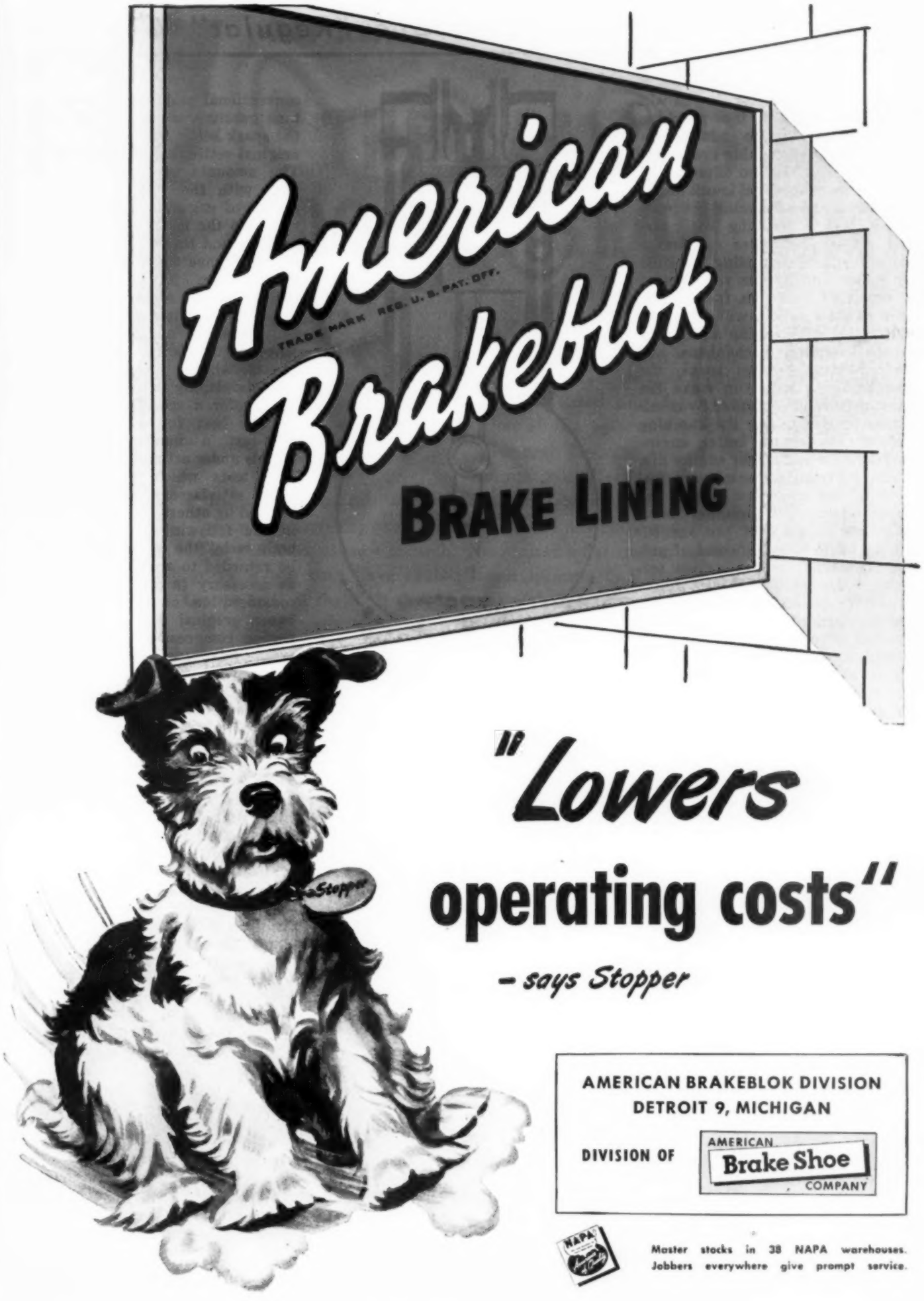
Put Your Free Copy of the *Know-How* Manual to Work in Your Shop as Soon as Possible!

A Bench Manual for the Automotive Mechanics who must "Keep 'Em Rolling" on Farm and Highway.

The ABC's of Basic Maintenance for Engine and Chassis.

Over 300 Pages. Profusely Illustrated. Covers Over 800 Different Operations.

Get it From Your Thompson Products *Jobber*



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TIME the SPARK TO REDUCE FUEL KNOCK

By Hoy Stevens

REDUCED SUPPLY OF TETRAETHYL LEAD in CIVILIAN GAS CALLS for MANY CHANGES in ENGINE ADJUSTMENTS — THIS ARTICLE TELLS HOW TO DO IT

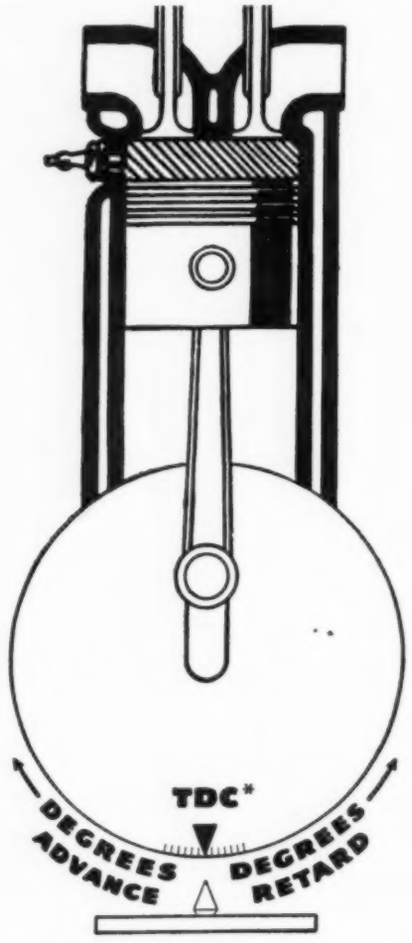
LAST month's article, as you will recall, outlined the problems brought about by the reduction in octane-rating of regular grade motor fuel to 70. It also offered suggestions as to how fuel knock might be minimized by reducing compression ratios; by securing better air-fuel ratios; by better carburetor adjustment; by correcting manifold air leaks; and by the replacement or repair of inefficient fuel pumps. This month's article will cover the subject of spark timing and errors in spark timing mechanisms, and their relation to fuel knock, the idea being to help you make the most of 70-octane gasoline by eliminating or minimizing the knocking and thereby obtain better engine performance and longer engine life.

Spark Timing: The most critical item in the successful use of reduced octane fuel (whether using 76-octane in place of pre-war 80-octane, or 70-octane instead of pre-war 75-octane) is the correct setting of the spark. In planning a procedure and standards for retarding the spark of *any* type of engine, the important thing is to first be sure that the controllable items discussed in our previous article (September, 1944) are all correct, *before* any changes are made in the spark timing.

Failure to have correct carburetor or fuel-pump action, or proper air-fuel ratio in the intake manifold, for example, may result in the necessity for excessive retardation of the spark timing. Such excessive retarding of the spark may cause overheating or undesirable loss of power. When overheating and extreme loss of power are noted, and all other engine and accessory units are in good order, the poor results may be considered an indication that structural changes in the engine are desirable.

As a general statement, it can be said that each degree of retardation of the spark timing will compensate for approximately 1½ octane-number reduction in gasoline rating. Most engines will accommodate from four to five degrees spark retardation without encountering serious difficulty with overheating or without serious reduction in power output or economy. Thus 4° to 5° retardation in spark timing will compensate for an octane reduction of between 6 and 7½ octane-numbers.

In setting the spark timing in the conventional manner for lower-octane gasoline, some retardation of the spark below the manufacturer's original settings may be necessary. The amounts of retardation will vary with the various types and models of engines, compression ratios, and the loads and severity of service; and the degree of retardation will have to be determined by the operator. For regular routine rechecking of spark timing with timing lights, it may be desirable to recalibrate and mark the flywheels after the new spark setting is established.



"AS a general statement, it can be said that each degree of retardation of the spark timing will compensate for approximately 1½ octane-number reduction in fuel."

In developing the optimum spark timing for a specific operation, it will be best for the operator to road-test a number of similar models under actual load conditions. Two tests which apparently are quite satisfactory have been developed by others and are described in the following paragraphs. In both tests, the spark should first be retarded to an extent estimated as necessary in accordance with a consideration of the relation between original flywheel markings, engine compression ratio and decrease in octane-rating of gasoline used.

Test 1: The vehicle should be fully loaded and a stretch of road selected which is reasonably level for a distance sufficient to make the test run. Start the vehicle and after warming-up the engine to between 160° and 170° F., shift into high gear at a speed of approximately 15 m.p.h. Then with wide-open throttle, note the speed at which detonation just disappears. With a desirable spark setting, the "just noticeable" knock point should be just below 25 m.p.h. If the knock disappears before 20 m.p.h., the spark can be advanced. If the knock continues after 25 m.p.h., the spark must be further retarded or other changes should be made in the engine to eliminate the knock.

Test 2: This test has been used by a city bus operator. An empty coach is used in the test. In making the test, the engine is warmed up, the coach is started and then placed in second gear and the throttle opened full. Under these conditions, a just noticeable "trace" knock should remain at 20 m.p.h. Adjustments in timing can then be made, either way, in order to produce the desired results.

The truck operator may find it

(*Please turn to page* 86)

GET READY FOR WINTER DRIVING WITH—

THE LAMPS THAT DO NOT GROW DIM!

YOU'LL get safer light on the road from start to finish of lamp life if your fleet is equipped with G-E Mazda Sealed Beam Headlamps. Road and laboratory tests show that at the very end of life the average General Electric Sealed Beam Headlamp still gives 99% of its initial high light-output! Why? Because the whole headlamp is a one-piece hermetically sealed unit. Dirt and moisture can never enter. The reflector cannot tarnish. No matter what makes of vehicles you use — if they have sealed beam systems, G-E Sealed Beam Lamps will fit them. If they are not sealed beam equipped, you can, in most cases, get adapters with G-E Sealed Beam Lamps. Get your headlighting ready for Winter driving NOW! Order a supply of G-E Mazda Sealed Beam Headlamps.

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GENERAL ELECTRIC

Hear the General Electric radio programs: "The G-E All-Girl Orchestra" Sunday 10 p.m. EWT, NBC; "The World Today" news every weekday 6:45 p.m. EWT, CBS

Reflector of G-E Mazda Sealed Beam headlamp never tarnishes—because dirt and moisture can't get into the lamp. Reflector-surface of polished mirror aluminum helps produce maximum efficiency.

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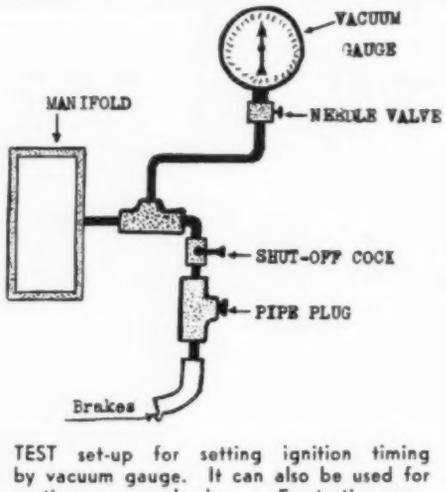
practical to test only a single loaded unit and with the data so obtained (if it appears reasonable in accordance with the above discussion) retard the spark the same amount on a number of either similar trucks or equivalent trucks. By then obtaining a full report from each driver after one full day's operation, the direction and extent of any necessary spark timing changes can be estimated. Then reset the spark timings as indicated by these estimates and let the trucks operate another day. In this way, with daily adjustments and drivers' comments, new and satisfactory spark setting standards can be developed in a few days. These new standards for each model of vehicle should then be maintained, as a later recurrence of detonation may be the result of other causes which should be corrected before "fiddling" with the spark timing. During this kind of testing for optimum setting, do not let the drivers do any unauthorized and uncontrolled spark setting on the road.

Later, in case of any doubt regarding the correctness of the spark timing set in the shop on any truck, the mechanic can always road-test the vehicle, using a consistent and uniform test procedure. Road-testing is rather simple for bus operators, as in their case the empty bus provides a consistent and sufficient load for test purposes. With a truck or tractor, the uniform test procedure can sometimes be formalized around a specified operation up a favorite hill with an empty vehicle. In this case, the hill can provide the extra and consistent load on the vehicle.

Errors in Spark Timing Mechanism: As a result of wear, most spark advance mechanisms tend to advance the spark *ahead* of the originally-designed rate. This incorrect advance rate introduces an obvious error into the high-speed timing when the distributor is set at idle speeds. If the same degree of wear in timing mechanisms existed on all engines, compensation could be made at the idle point. Obviously, all wear is *not* uniform, and this raises a very fundamental question as to why ignition timing is not checked at operating speeds rather than at idle speeds? When the spark timing of a vehicle is set by road-testing, it is equivalent to setting the timing at operating speeds.

Wear or excessive looseness in the bushings carrying the distributor cam may permit this cam to "bounce" around, so that the breaker points may not be opened at absolutely regular intervals for each cylinder. This irregular spark timing can result in misleading individual cylinder detonation. In adjusting the spark timing to overcome such erratic timing, there is a great possibility of retarding the spark more than is desirable or necessary. An electronic cam-dwell meter will give indications of such worn distributor conditions. At any rate, the breaker mechanism should be in good snug shape for best results with low-octane gasoline.



TEST set-up for setting ignition timing by vacuum gauge. It can also be used for routine vacuum checks. . . . For testing power brakes and other vacuum devices, it is only necessary to transpose the pipe plug and the vacuum gauge. (See p. 76, Sept.)

It is difficult to check spark timing against flywheel marks at speeds in the neighborhood of 1500 to 1800 r.p.m. with the conventional simple neon timing light. This is a result of the fundamental characteristics of the simple neon light. Its light intervals, instead of being of very short duration, extend over a considerable period of time so that the observed marks are fuzzy. To check timing marks accurately at high speed, a timer built on the principles used in the grid-glow stroboscope lamps is needed. Such testers are now available on the market.

Spark Timing with a Vacuum Gauge: Another way of setting the spark timing in the shop is by means of a vacuum gauge. This technique is not difficult to learn and does give a useful way of setting spark timing at high engine speed without reference to flywheel markings. (This vacuum gauge technique was taught to the writer by William M. Wilks of the Socony-Vacuum Oil Company, Cleveland, Ohio.)

For use in spark setting, the vacuum gauge should be equipped with a needle valve on its inlet tube. By means of this needle valve, the effective opening in the gauge line can be restricted. This restriction in the line will steady the gauge needle so that it will not flutter in response to rapid pulsations in the intake manifold, but will show the average vacuum and will indicate changes in the average vacuum as a result of adjustments. This steady average reading of the vacu-

(*Please turn to page* 88)

THE use of modern test equipment will, of course, help make your timing adjustments easy. However, a good vacuum gauge, hooked in as above, will also do the trick, says the author.

TIMKEN TORTURE TEST NO. 21454

Your assurance of reliable performance of Timken Axles and Brakes is found in the "Torture Tests" going on day after day in Timken's modern engineering laboratories.

Every new design, whether it be a complete axle or a new type of hardened pin, is Torture Tested under conditions far more severe than it will encounter in daily service. Production units and parts, even though they have proved satisfactory in years of service, are constantly "check-tested" too.

Typical of these Torture Tests is the spiral bevel gear and pinion set illustrated above. This is just one of hundreds of tests, in which several sets of gears, all of one model and ratio, are run to destruction under maximum torque input. Tests of similar gear sets are made under identical conditions at slow speed, where the greatest tooth load is imposed and lubrication is most difficult.

If performance is not up to Timken's high standards, changes are made in design or materials and the tests repeated.

Then, no matter how satisfactory the laboratory Torture Tests have been, they are confirmed by lengthy road tests under actual operating conditions —tests that may run from a hundred thousand up to several million miles.

From these and hundreds of other severe tests Timken engineers are constantly learning how to still further improve Timken Axles and Brakes. To these men, whose combined axle engineering experience totals hundreds of years, every Torture Test is a new challenge—an opportunity to make Timken products better.

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For Production "Well Done"

um gauge is used to set spark timing by the procedure outlined herewith.

The chief trick in the use of the vaccum gauge for spark timing is that all other variables in the condition of the engine must first be eliminated as far as possible. For example, valve tappet clearances must be correct; valve seats must be in good condition so that compression is normal and equal in all cylinders; sticky valves must be eliminated; breaker points must be set to the proper opening; the bushings of the distributor shaft must not be excessively loose; and spark plug gaps must be correct. The vacuum gauge can be used to check and test these conditions and other adjustments of an engine, and those testing techniques and condition symptoms have been described by other writers. The procedure which follows is for use in setting spark timing.

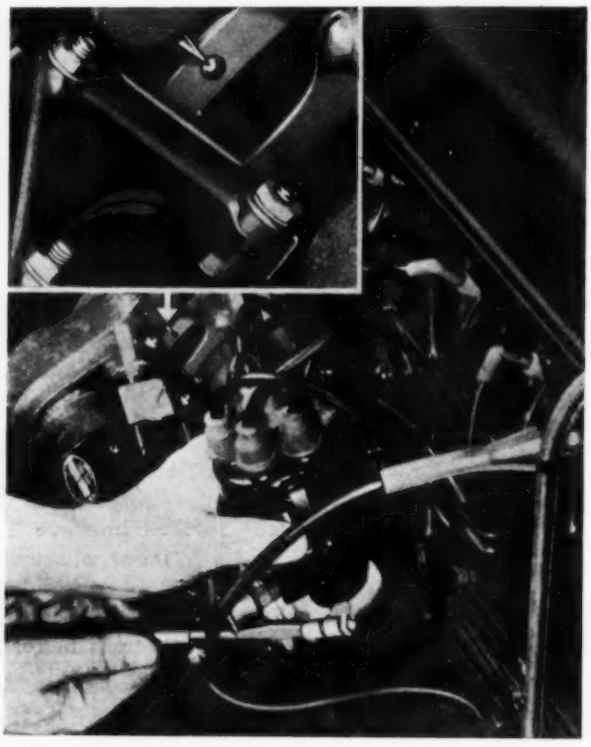
When all engine conditions and adjustments (except timing) are in good order, connect the vacuum gauge to the intake manifold through a convenient fitting and start the engine. Any pipes or hoses leading to the vacuum brake system should be shut off, so as to avoid the possibility of air leaks from these sources. With a permanent test set-up on the intake manifold, as illustrated on page 86, the shut-off cock between the two tees should be closed. Next restrict the gauge line with the needle valve, until the rapid fluctuations of the gauge needle are steadied to a smooth, slow movement. Be careful not to shut off the gauge line completely, but just restrict the gauge line enough so that a steady needle is obtained, which can be read to the nearest .2" of vacuum.

Now adjust the idle speed, by means of the throttle stop-screw, to about 400 r.p.m. The idle mixture is then adjusted to the position which produces the highest vacuum reading; this highest vacuum should be noted. The idle mixture is then enriched by a quarter to a half turn of the mixture adjusting screw. The vacuum should be between 17.5 and 19 inches for a normal condition. If the vacuum is below 17.5 inches, it can be assumed that some other condition is incorrect, and should be corrected before you proceed further.

Next loosen the lock-screw on the distributor and rotate the distributor to advance or retard the spark timing until the highest vacuum reading is obtained with a *steady running* engine. Note this maximum vacuum reading with steady running engine, for later use. Sometimes increased vacuum can be obtained by advancing the spark timing too far. This incorrect adjustment, however, is accompanied by irregular or "rough" running of the engine.

Next speed up the engine to at least 1500 r.p.m. or to a point at which all automatic spark advances, both mechanical and vacuum, are fully advanced, and hold the engine at this speed during the rest of the timing procedure. If the vacuum advance is not fully advanced at 1500 r.p.m., block or tie the vacuum advance mechanism into its fully advanced position.

If the advance mechanism is working correctly and the engine conditions are good, the vacuum at 1500 r.p.m.—no load—full spark advance—will be approximately equal to the maximum vacuum at idle.



ONE method of timing engines by means of flywheel mark and conventional neon timing light. . . . However, to check flywheel marks accurately at high speed, the author suggests the use of a grid-glow stroboscopic timing lamp.

If the vacuum at 1500 r.p.m. is higher than at idle, it usually indicates that the advance mechanism is worn and advances more than its designed limit. If the 1500 r.p.m vacuum is *below* the idle vacuum, it indicates errors or defects. If the defects are not too serious, the causes of both types of errors can be compensated for during the following procedure.

Loosen the distributor lock-screw and advance and retard the distributor, while watching the vacuum gauge, until a position is found which produces maximum intake manifold vacuum with a steady running engine. The combination of these two items, *distributor position at maximum intake vacuum with steady engine*, is the basic point from which the distributor is retarded to produce correct spark timing; but the maximum vacuum at 1500 r.p.m. should be approximately the same as maximum vacuum at idle. (See later discussion if this is not the case.)

In the final spark timing adjustment, the extent to which the distributor is retarded from its maximum vacuum point is measured by watching the vacuum gauge. The extent of retardation will depend upon the knock characteristics of the fuel and the type of service. By trial, a standard of retardation can be obtained for specific engines in a given operation.

Approximately 10 percent spark retardation is caused by a 1" mercury reduction in vacuum from maximum vacuum. The following retardation values have been found satisfactory for heavy-duty truck freight operation in the Middle West: On 76-octane gasoline, 0" to ⅛" vacuum reading below maximum vacuum. On 70-octane gasoline, ½" to ¾" vacuum reading below maximum vacuum.

The following are the approximate vacuums for engines in good operating condition at 1500 r.p.m., no load, with spark fully advanced, for different grades of gasoline: 86-octane fuel, 19" plus; 80-octane fuel, 18.5"; 76-octane fuel, 18.3"; 70-octane fuel, 18.0". These values are for reference only, or may be used to give a

(*Please turn to page* 140)

Why it will pay YOU to enter

The 7th Annual TRAILMOBILE TROPHY CONTEST

August 1, 1944 - July 31, 1945

For best highway transport records of Safety, Service, Load-planning Improvement and Preventive Maintenance

REGARDLESS of the size of your trucking business, you have a good chance to win the Trailmobile Trophy or an Honorable Mention award! What's more, taking part in this contest will repay you in a business way. It will help you—

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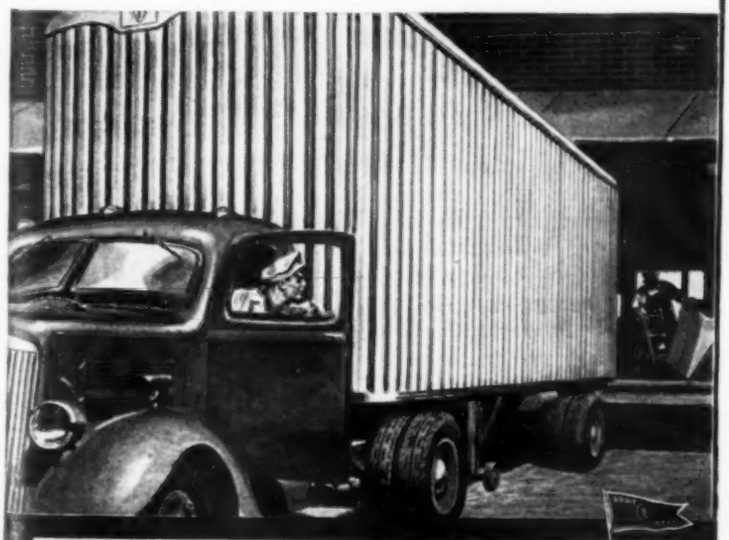
Decide NOW to enter the nation's outstanding contest for the trucking industry! **Write for "HOW TO WIN" folder to American Trucking Associations, Inc., Washington, D. C., or The Trailer Company of America, Cincinnati 9, Ohio.**



TRAILMOBILE

Commercial Trailers for War and Peace • The Vital Link in Flexible Transportation

CONTEST RULES

Any property motor carrier may enter up to May 1, 1945.

Judges will be selected by The American Trucking Associations, and their decisions will be final.

Awards are based on reports attesting Safety and Service, Preventive Maintenance, Mile Reduction and Better Load Planning, for period beginning Aug. 1, 1944, ending July 31, 1945.

All statements should be simple, straightforward, and substantiated by company records. Include letters received from people assisted on the highways and evidence showing how better planning and loading made possible mile-reduction.

Final reports must be made to The American Trucking Associations, Washington, D. C., on or before September 1, 1945.

Awards will be announced at the 1945 Convention of The American Trucking Associations.

COMPANY AWARDS

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PLAQUES—awarded to the two companies whose achievements merit honorable mention.

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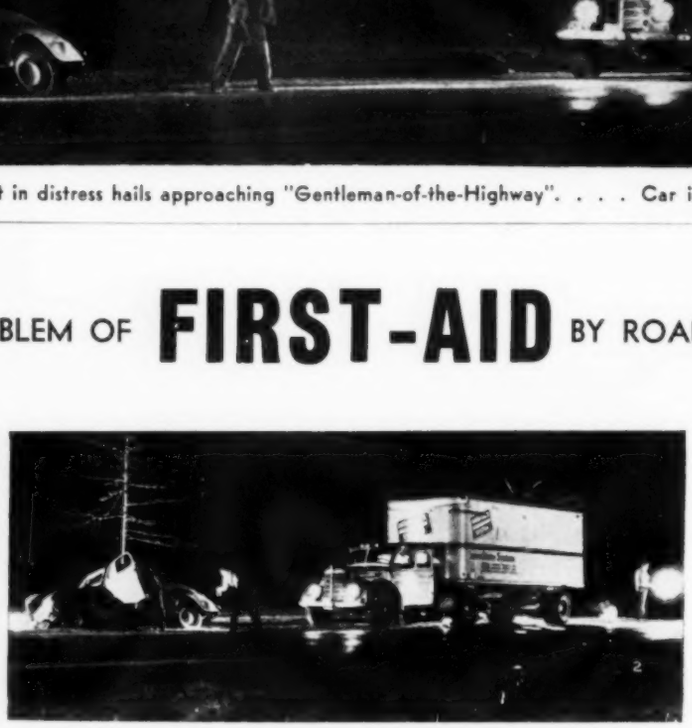
IDENTIFICATION PINS—one for each driver of each contestant's fleet.

CHEVRONS—drivers of the winning company are provided with handsome embroidered chevrons.

HELP Wanted! . . . Motorist in distress hails approaching "Gentleman-of-the-Highway". . . . Car is wrecked and someone is hurt.

THE PROBLEM OF FIRST-AID BY ROAD DRIVERS



TRUCK driver and his helper first set out flares to protect others.

THEN they render first-aid until expert medical attention arrives.

SAFETY experts agree that the tire situation is going to take its toll in highway casualties, perhaps not definitely noticeable at first, but increasing sharply as time goes on and as present automobilists' tires near the dangerously worn stage, when blowouts and other failures shall occur. Even now it is not uncommon to see many cars stalled along the highway on account of tire trouble. Unless the speed limit is observed more than it has been to date, the highway accident curve is bound to rise to much higher levels.

Because many fleet operators have in the past enjoyed the distinction of being "Good Samaritans of the Highway" and their drivers "Gentlemen of the Road", helping stalled motorists whenever possible, rendering first-aid at accident scenes, etc., the problem of *how far* this may have to go in the future is causing serious concern.

The truck industry has taught the rank-and-file motorist to believe that if he ever found himself in difficulty on the highway, the chances were good that the man who helped get him out of his trouble would be the driver of a passing truck. Many stories have been related, without end, of how passenger-cars flitted by, time and time again, leaving motorists in distress to work out their problems for themselves.

This attitude of indifference on the part of the automobile driver is excusable from several standpoints. In the first place, there is always the danger of a hold-up; these have been all too frequent in the past few years. Then too, many "white-collar" individuals do not seem to have the "stomach" to render assistance when accidents involving serious physical injury have occurred. Besides there is always the constant fear of the innocent driver becoming legally involved in the accident and it has been quite natural for one to shun the thing, rather than stick his neck out.

The truck driver, on the other hand, with insurance and company protection, has no fears of this kind. Besides, he is a hardier type of individual and most of them are trained in first-aid routine, as related in many articles previously appearing in this publication. The result is that he not only has been able to give aid, but he has generally been interested and *willing*. That this state of affairs has reacted with much benefit to the favor of the truck industry—especially trucking-for-hire—is now generally recognized. It has also resulted in dispelling, to a great degree, the general impression that truck drivers are crude, uncouth fellows and the worst type of road-hog.

Through the courtesy of Fruehauf Trailer Company this publication has been fortunate in obtaining a set of actual, on-the-scene, photographs, showing a typical case of where a truck driver has done his part—a part that the industry has long strived to bring about.

In the top illustration we see, first, one of the passengers of a wrecked car, lying in the ditch, hailing an oncoming tractor-trailer unit of a well-known high-

(*Please turn to page* 143)

This "PAUL BUNYAN" WRECKER *...is* 100% THERMOID EQUIPPED!

LIKE "PAUL BUNYAN" the legendary giant of the Northwest, this super wrecker of the Garvey Truck Service, Stockton, Calif., has become famous for its feats of strength throughout California and Nevada.

Many times it is called on to snake the heaviest truck and trailer wrecks from ditches and mountain gorges. With its special extension boom in place, it has frequently been used to lift boats *ten times its size* into the water at Stockton Ship Yards.

Such a sheer abundance of power on the move means a tough, rugged job for brake lining. Speaking of brake lining, Mr. Garvey says:

"When you're in the business of towing wrecks, you learn how much it means to have good lining on brakes. We can't afford to take a chance on our brakes failing. If this wrecker ever lands in a ditch, I don't know what we'd use to pull us out."

That is why the super wrecker—and all other Garvey units—are 100% Thermoid equipped. Try Thermoid on your toughest installation and let the results convince you it's wise to specify Thermoid.

Pledged U.S. TRUCK CONSERVATION CORPS JOIN NOW!

Thermoid

Custom-Built Brake Lining Sets • CBB Sets • Thermo-blocks for heaviest duty

★ THERMOID COMPANY ★ *Trenton, New Jersey* ★

THE FLEETWAY

Engineered for over-the-highway service and general hauling, U. S. Royal Fleetway is first choice of truck operators who want to get most miles for every certificate they spend. Remember Fleetway —more tire for your certificate!

THIS IS THE SIGN

of a local, independent business built on experience, skilled service and products of quality.

U.S. TIRES

"U.S." Transportation Maintenance...a simple, practical plan to cut operating costs, stretch truck tire mileage and reduce road delays. Call in your U.S. Truck Tire distributor today.

TO GET GOOD TRUCK TIRE PERFORMANCE

DO IT RIGHT THE FIRST TIME

Here's how!

First, be sure you have these necessary materials on hand:

1. Wire brush for cleaning rims.
2. Paint brush, 1 to 1½ inches in width, or cloth.
3. Soapstone, talc, or mica in shaker can or tied in cheese cloth sacks.
4. Vegetable oil soap.

LUBRICATE

UNITED

Mount Tires Correctly!

At *any* time and *all* the time, proper mounting of truck tires, tubes and flaps is a "SHOULD" for profitable operation.

Now in wartime with Synthetic tires, tubes and flaps, it is an *absolute* "MUST"

Any way you do it, mounting tires takes a certain amount of work. Why not do it right the first time?

Mounting truck tires the right way takes only just a little more work, a little more time, a little more material. And you get a LOT MORE MILES per tire.

Mounting tires the wrong way still takes work, is bound to make you more trouble in the end, and cuts tire life and mileage way down.

Now, follow these steps:

1. Make vegetable oil soap solution. Mix one pound of soap with *one-half* pint of water. Stir well and stir again every time before using. You can estimate a pound by taking one-fifth of contents of 5-pound can, etc.
2. Clean rim thoroughly, especially inside of flanges, preferably using wire brush. Straighten bent flanges, take out dents, etc.
3. Inspect inside of tire, remove dirt, stones, etc., and dust thoroughly with soapstone, talc or mica. Remove any excess of soapstone.
4. Inflate tube until just rounded out. Dust with soapstone. Insert in casing.
5. With paint brush or cloth, apply vegetable oil soap solution on inside of beads and that part of tube between beads. (With passenger type tires, also apply solution on outside of beads so that casing will slip easily over rim flanges.)
6. Next insert flap in casing. The lubrication on the inside of beads and on tube will permit wings of flap to slip into position between the tube and the shoulders of beads.
7. Apply soap solution evenly on the flap between the beads.
8. Mount casing on rim in regular way.
9. Inflate to full recommended pressure, until tire beads are seated.
10. DEFLATE, preferably by removing valve core,
11. RE-INFLATE to recommended pressure.

WHY all the special care?

Because *un*-lubricated tubes and flaps will "freeze" to the casing and will not slip down against the rim into their proper positions during initial inflation. When this "freezing" occurs, the tube and flap are subjected to abnormal stretching and are likely to crack and split. When this happens, costly, premature failure results.

When tire, tube, flap and rim are all properly assembled:

1. The beads fit snugly and firmly on the rim.
2. The flap lies evenly and smoothly against rim and against inside of beads without strain or distortion.
3. The tube fits uniformly and without excessive stretching.
4. The entire assembly is perfectly put together and each part can efficiently perform the particular work for which it is designed.

IMPORTANT NOTE: When tires are used on wide-base rims it is necessary *to equip with the next larger size tube in all sizes up to and including 9:00* in accordance with Tire & Rim Association recommendations for both rubber and synthetic tires. The larger synthetic tube is particularly required because of its lower stretching qualities. A *wider* flap is required also with all sizes of tires when installed on wide-base rims.

★ ★ ★

Your U. S. Truck Tire Distributor can supply you with "U.S." Vegetable Oil Soap and "U.S." Soapstone.

REPRINTS AVAILABLE

Reprints of these suggestions, on heavy paper suitable for garage and shop display, will be supplied on request. Ask your U. S. Truck Tire distributo

INFLATE · DEFLATE · RE-INFLATE

Listen to the Philharmonic-Symphony program over the CBS network Sunday afternoon, 3:00 to 4:30 E.W.T. Carl Van Doren and a guest star present an interlude of historical significance.

SERVING THROUGH SCIENCE **FOR GREATER TRUCK TIRE MILEAGE**

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TEST ANTI-FREEZE? HERE'S HOW . . .

HOW to GUARD AGAINST INFERIOR ANTI-FREEZES THAT MAY DAMAGE YOUR COOLING SYSTEMS — ALSO SOME SOUND ADVICE ON TESTING OLD ANTI-FREEZE BEFORE RE-USE

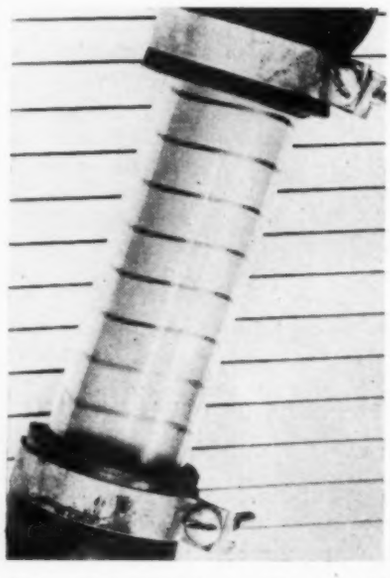
By Hoy Stevens

THE approach of the winter season recalls the need for anti-freeze. The prospects in regard to anti-freezes appear this year to be about the same as they were last fall. The supply of standard anti-freezes (alcohol or ethylene glycol) should be sufficient, but not generous; so there is no need for anyone to use doubtful or deleterious anti-freeze chemicals.

With a tight supply of standard anti-freezes, however, there is a great opportunity for the "gyp" salesman to offer substitutes. Even though WPB Order L-258 prohibits the manufacture and sale of deleterious anti-freeze materials, there is always the possibility of the "gyp" offering a deleterious product which has been made in small plants. The claims made for such anti-freezes frequently include statements indicating that the solution is a new "secret" formula which contains no alcohol, no ethylene glycol, or no sodium chloride. Such claims should be viewed with suspicion and the materials not used unless tests are made to determine the chemical contents.

In this article, the writer will discuss the more common types of substitute and deleterious anti-freeze chemicals and will describe some simple home and shop tests which anyone can apply, in order to make a quick check on the constituents of a doubtful material.

Deleterious Substitutes: The salt solutions which have been offered in the past have usually been solutions of calcium chloride, magnesium chloride, or sodium chloride (common salt). Calcium chloride has been the most frequently offered salt solution, as its anti-freeze efficiency is the greatest of the three salts.



Old anti-freeze after settling should clear up nearly water-white, like this

Calcium chloride solutions have been found to have a corrosive action on the engine water jacket, on the solder in the radiator, and on aluminum which is sometimes used in manifolds, water-pumps and cylinder heads. In addition, a very troublesome effect is experienced if the solution leaks out of the cooling system and wets the ignition wires or parts of the electrical system. The salt which remains when the water evaporates is extremely hygroscopic, so that electrical leakage and serious damage to electrical insulation and ignition units will result. Makers of calcium chloride anti-freeze compounds frequently state they use inhibitors which they claim will prevent corrosive action. Sodium chromate or other soluble chromates have been used as corrosion inhibitors with calcium chloride solutions. In laboratory tests with new solutions, the chromates appear to inhibit successfully, but actual operating use of such inhibited calcium chloride solutions has *not* been successful. While it is always possible that some permanent inhibitors may be found, up to the present time, the National Bureau of Standards (Technical News Bulletin, March, 1943) does not know of any inhibitor which is effective under the conditions of actual engine operation.

Magnesium chloride has also been offered in solution as an anti-freeze. In use, its action and efficiency are similar to that of calcium chloride, but its corrosive action on engine parts is undesirable and uncontrollable. No permanent corrosion inhibitor is available for this salt.

The petroleum-base types of anti-freezes have little effect upon the metallic parts of the cooling system, but they do

(*Please turn to page* 96)

PROVING GROUNDS

In the crucible of battle on land, at sea, in the air—in tanks, trucks, jeeps . . . in destroyers, submarines, escort and landing craft . . . in 80 types of Allied war planes—American Hammered Piston Rings prove their absolute correctness for every purpose. Koppers Company, American Hammered Piston Ring Division, Baltimore, Maryland.

WAR PLANES USING AMERICAN HAMMERED PISTON RINGS

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A-20 Havoc
A-22 Maryland
A-24 Dauntless
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A-36 Invader
B-17 Flying Fortress
B-18 Bolo
B-23 Dragon
B-24 Liberator
B-25 Mitchell
B-26 Marauder
B-29 Superfortress
B-34 Ventura
C-43 Traveler
C-45A Voyager
C-46 Commando
C-47 Skytrain
C-53 Skytrooper
C-54 Skymaster
C-56 Lodestar
C-61 Forwarder
C-69 Constellation
C-76 Caravan
C-87 Liberator Express
J-4-F Widgeon
L-1 Vigilant
L-2 Hedgehopper
L-3 Grasshopper
L-4 Grasshopper
L-5 Sentinel
O-52 Owl
P-40F Warhawk
P-43 Lancer
P-47 Thunderbolt
P-51B Mustang
P-61 Black Widow
P-66 Vanguard
AT-6 Texan
AT-7 Navigator
AT-8 Bobcat
AT-9 Jeep
AT-10 Wichita
AT-11 Kansan
AT-13 Yankee Doodle
AT-14 Yankee Doodle
AT-15 Crewmaker
AT-17 Bobcat
AT-19 Reliant
BT-13 Valiant
BT-15 Valiant
PT-13 Kaydet
PT-17 Kaydet
PT-19 Cornell
PT-22 Recruit
PT-26 Cornell
F2A Buffalo
F4F Wildcat
F4U Corsair
F6F Hellcat
N2T Tutor
OS2U Kingfisher
PBM Mariner
PBY Catalina
PB2Y Coronado
SB2A Bermuda
SB2C Helldiver
SB2U Vindicator
SBD-3 Dauntless
SO3C Seagull
SNC Falcon
SNJ Texan
TBD Devastator
TBF Avenger
JRM-1 Mars
YO-51 Dragonfly
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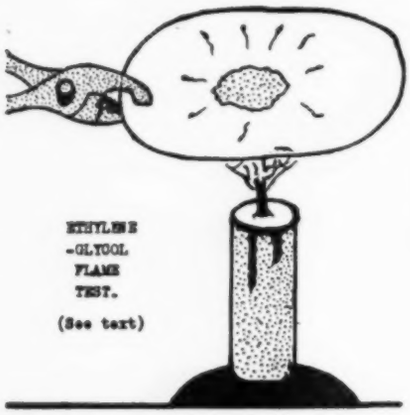
A KOPPERS PRODUCT

TEST OLD ANTI-FREEZE BEFORE RE-USE (Continued)



Ethylene Glycol, when subjected to this test, will not spread. . . . It will give off white, inflammable vapors when boiling.

have a very deteriorating effect upon the hose connections. For the past few years, during the war period, most commercial radiator hose has been made of reclaimed rubber. The petroleum-base anti-freezes attack these reclaimed rubber hoses quite rapidly so that there is a serious danger from entire loss of the cooling liquid while the vehicle is in operation. There is also a greater fire hazard with petroleum anti-freezes and there are other disadvantages which have been described in other publications.

Tests for Deleterious Solutions: The contents of any suspected compound can, of course, be analyzed by a competent chemical laboratory, but in many cases this may not be feasible on the part of the small user. For this reason, the simple tests outlined in this article are suggested as a means by which some knowledge of the content of an anti-freeze solution can be quickly determined. These tests are not suggested as a positive and final means of determining the chemical contents of an anti-freeze solution, but they are simple means by which a quick investigation of doubtful solutions can be made.

Weight Test: A first means of identifying the various types of anti-freeze materials is by weighing the undiluted material as it is sold by the vendor. The following are the approximate weights of various materials, in lbs. per U. S. Gallon: Ethanol (denatured ethyl alcohol), 6.6 to 7.0 lbs. Methanol (wood alcohol), 6.6 to 7.0 lbs. Petroleum-base liquids, 6.6 to 7.0 lbs. Ethylene Glycol (permanent type), 9.0 to 9.5 lbs. Brine solutions (calcium chloride and other salts), 10.3 to 11.5 lbs. Clear water, 8.33 lbs. These weights are of one gallon of an undiluted solution of the various materials.

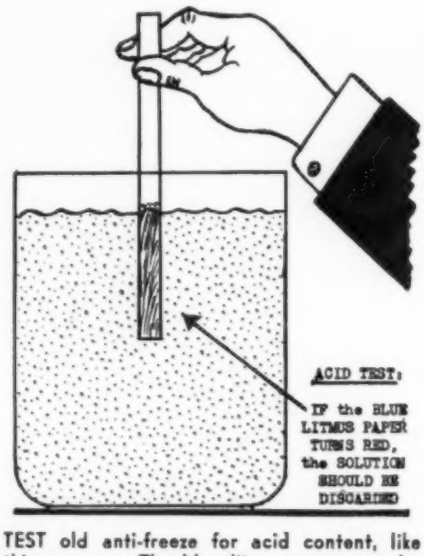
In weighing a sample gallon of one of these materials, the weight of the container must be subtracted from the total observed weight in order to determine the actual weight of the contents. (The commercial, narrow-mouthed glass bottles which are frequently used for shipping anti-freezes weigh in the neighborhood of 2 lbs., 14 oz.; while the wide-mouthed glass bottles weigh approximately 3 lbs., 2 oz. However, it is always best to pour out the liquid and re-weigh the empty container, whether it be glass or metal.)

Petroleum Identification Tests: The petroleum type materials usually can be identified from their odor and from the feel of the liquid when rubbed between the fingers. The petroleum type materials are about the consistency of kerosene, and, like kerosene and oil, they do not mix with water.

An additional clue that a doubtful material may be petroleum, may be found in the directions for use of the material, which instruct that the material be used full strength without any dilution with water. Such instructions are needed because the petroleum materials do not dissolve into the water.

Tests for Salt Compounds: Solutions can be identified as to whether they contain salt compounds by the following two tests:

Test A: For undiluted solutions (as supplied by the vendor) approximately one-half teacup of the solution will be sufficient for a test. For the investigation of diluted solutions which may have been stored over a season, it may be desirable to use as much as one pint of the diluted solution. . . . Place the solution in an iron or tin-plated container, such as an iron skillet or a tin can (do not use aluminum), and bring the solution slowly to a boil on a stove. Continue boiling at a slow rate until the water is boiled away. If the solution contained a salt compound, there will be a substantial deposit of salt left in the container. If the solution was a concentrated solution of calcium chloride, the volume of salt remaining may amount to 30% of the original volume of the solution. . . . *Note:* Most of the alcohol and ethylene glycol anti-freezes have corrosion and rust inhibitors which upon evaporation may leave a small amount of crust in the bottom of the container. These small deposits are not evidences of deleterious compounds.



TEST old anti-freeze for acid content, like this. . . . The blue litmus paper can be obtained at your neighborhood drug store.

Test B: Place a small quantity of the suspected solution in a water glass and add a few drops of fresh, commercial solution of silver nitrate with a medicine dropper. The formation of a white precipitate (silver chloride) will indicate that the anti-freeze was a salt solution.

Test for Alcohol (Ethanol or Methanol): It should not be difficult to identify undiluted alcohol by its odor, but if it is desired to test a diluted solution, it can be boiled off in the manner described above for salt compounds. The boiling point of alcohol solutions is below the boiling point of water (212° F.). With alcohol, there should be no residue except the very light crust left by the rust and corrosion inhibitor, or slight traces of oil which might have been used as a rust preventive.

Test for Ethylene Glycol: To identify a doubtful diluted solution, thought to be ethylene glycol, a sample of the diluted solution can also be boiled off in the manner described for salt compounds. With ethylene glycol, it will be found that the boiling point is much above the boiling point of the alcohol or salt solutions. A candy or cooking thermometer can be used to observe the higher boiling point. As the water boils out of the solution, the boiling temperature will increase from about 225° to 235° F. for a diluted solution, to a temper-

(*Please turn to page* 142)

Think, man... the main defense any motor vehicle has is *Oil!*

TRAFFIC MANAGER: *"I notice, Jim, that the availability of our trucks has been better lately. Less motor trouble. How come?"*

SHOP MANAGER: *"Better oil, for one thing—we're using Quaker State HD Oil now. Better for our motors—helps us—and you."*

TRUCKS today have got to last. Same with buses and other motorized equipment. The main defense they have against wear is OIL. Considering the work motor vehicles are called upon to perform, the most costly extravagance in their operation is the use of cheap oil. Taking everything into account, the better the oil, the less it costs. And the best oil is an oil that provides film that lubricates best and *longest*.

Quaker State HD Oil is that kind of oil. That's why more and more fleets of trucks and buses are using it. It provides lubrication that is long-lasting. And it contains a special detergent that keeps motors cleaner, more free from sludge, dirt, and trouble-making gummy "varnish."

QUAKER STATE HD OIL

AND QUAKER STATE SUPERFINE LUBRICANTS

Quaker State HD Oil for your trucks, buses and tractors

Pledged U.S. TRUCK CONSERVATION CORPS

Quaker State Motor Oil for your passenger cars

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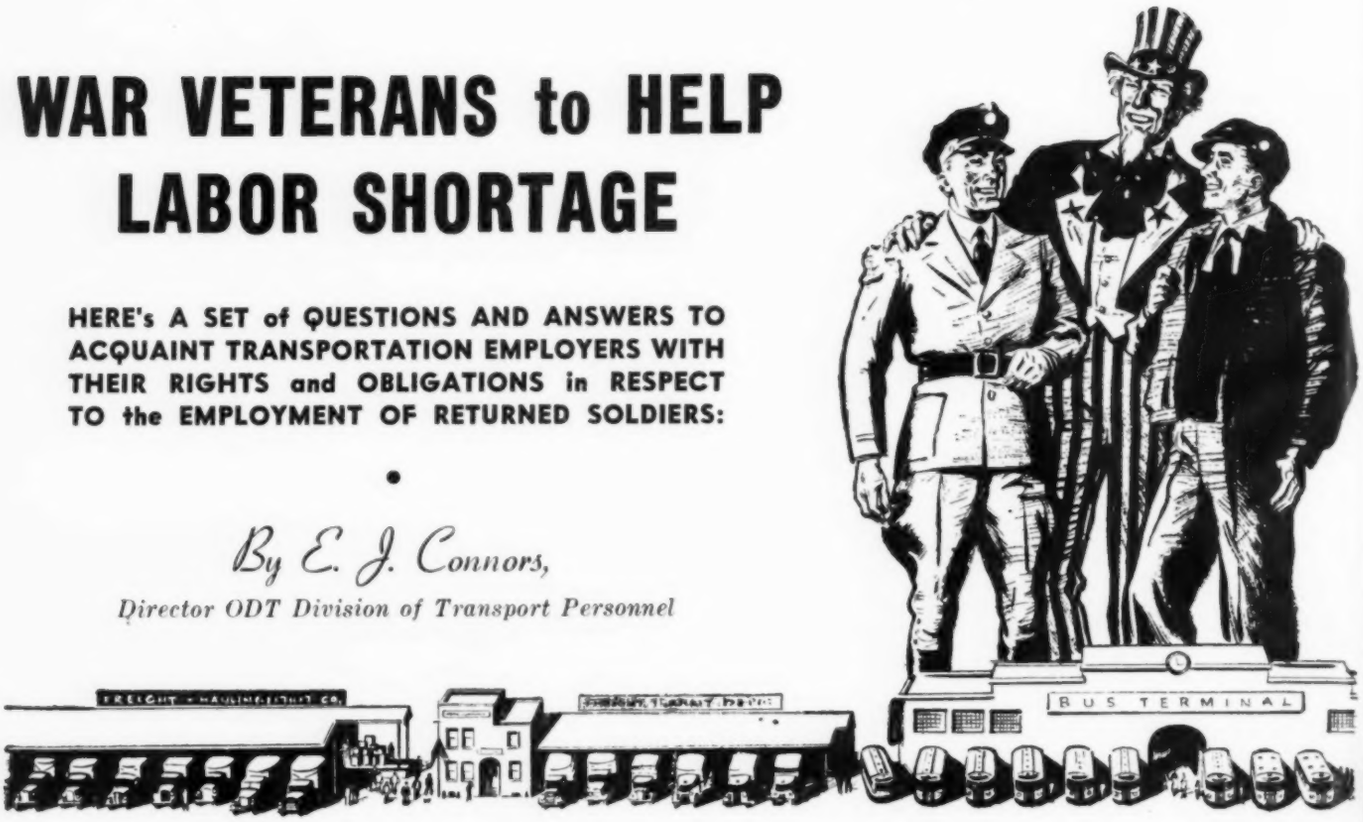
WAR VETERANS to HELP LABOR SHORTAGE

HERE's A SET of QUESTIONS AND ANSWERS TO ACQUAINT TRANSPORTATION EMPLOYERS WITH THEIR RIGHTS and OBLIGATIONS in RESPECT TO the EMPLOYMENT OF RETURNED SOLDIERS:

•

By E. J. Connors,

Director ODT Division of Transport Personnel



GETTING and holding a competent working force continues to be a serious problem for many automotive maintenance employers. Essential repair work is often turned away or postponed for many days. With the continued deterioration of motor vehicles, this situation is apt to grow progressively worse unless all concerned give vigorous attention to the problem.

One important source of new workers is the returning war veteran. Many of these men have obtained valuable technical and practical experience in the care and repair of military vehicles. Many of them have become well acquainted with this field of work for the first time and will wish to make it their civilian occupation. Automotive maintenance employers should be cognizant of this and provide every opportunity to veterans who wish to become maintenance workers. Such efforts will pay dividends and will go far toward relieving the manpower shortage in the industry.

The following questions and answers have been prepared by the Division of Transport Personnel at the request of the Automotive Maintenance Manpower Committee, to acquaint employers with their rights and obligations with respect to the employment of veterans. The material has been prepared with the help and advice of the several Federal agencies which have direct responsibilities in connection with returning veterans. Each employer should become thoroughly acquainted with the procedure for hiring returned veterans and should contact the representatives mentioned in the following paragraphs to secure their advice and assistance whenever necessary:

(1) *How Many Veterans Are Being Discharged from Military Service?:* Approximately 45,000 per month are being discharged by the armed forces. Each of these men is a potential worker. Many of them have previously been employed in the automotive maintenance industry. Many others will now be available for such employment. While some of these men are taking their old jobs back, the majority will be looking for new employment.

(2) *Can These Men Have Their Old Jobs Back?:* Yes, provided they left permanent jobs to enter active military service. The law which established the Selective Service System also provided that a Personnel Division be established to assist the veteran in getting his old job back. Each local draft board will have one or more re-employment committeemen who will work with the veteran and the employer. The State Selective Service Director will assist the veteran in securing re-employment. Where the employer declines to rehire the veteran, the U. S. Attorney will represent the veteran without charge, if the dispute is taken to court.

(3) *What Must the Veteran Do to Get His Old Job Back?:* The veteran must do the following things to take advantage of his re-employment rights: (a) He must present his certificate of discharge showing that he satisfactorily completed his period of service; (b) He must be qualified to do the work; (c) He must make application for re-employment within 40 days after he is relieved from service.

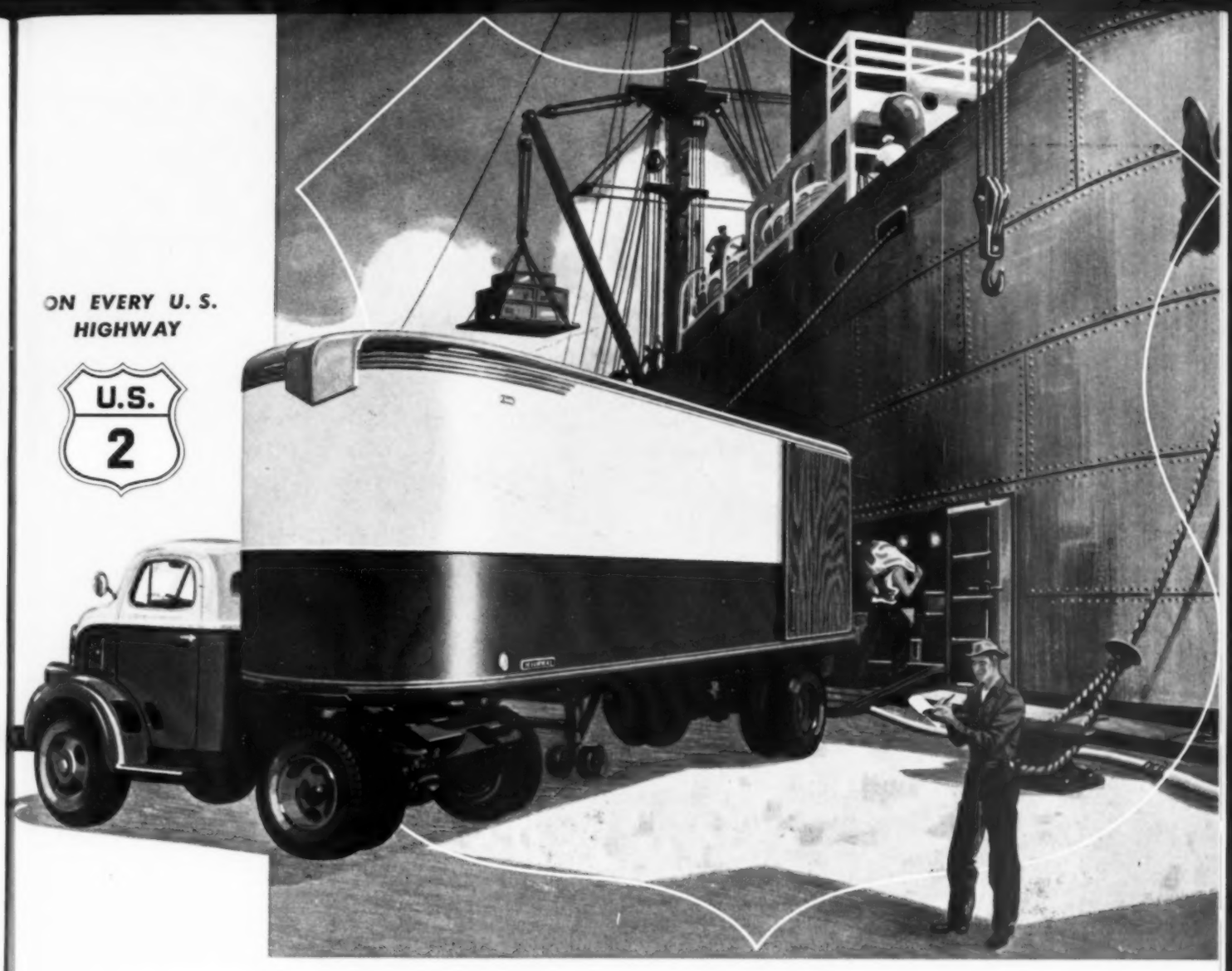
(4) *Where Can You Find Out More Information About the Legal Requirements of Re-Employing Veterans?:* If you desire additional information on the legal requirements having to do with re-employing veterans, this can be obtained through your local draft board or by requesting information from the U. S. Employment Service in your town.

(5) *What If a Veteran Wants a New Job?:* Returning veterans have absolute freedom of choice in the job which they wish to take. Moreover, for the 60 days after their initial employment following discharge, they can obtain a statement of availability from USES upon request. This means that a returning veteran may take a vacation in order to get rested up. He then accepts a job. For 60 days following the day he takes the first job, he is free to leave that job and accept other employment. During this time the U. S. Employment Service will assist him in every possible way in finding the job which

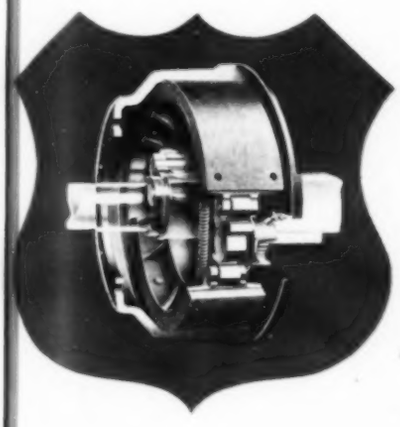
(*Please turn to page* 144)

ON EVERY U. S. HIGHWAY

U.S. 2



Better-fitted for big jobs



Highway is manufacturing commercial trailers again in limited numbers. The new Highway "Clipper" is already in production, a finer, more efficient, more economical trailer to operate—the kind of a trailer you would expect to come out of Highway's extensive experience in wartime manufacture.

This new, improved Highway "Clipper" and its companion, the "Freightmaster," have many notable features, among the most important of which are the larger brakes. These new brakes measure 5½" and 7" in width and 16½" in diameter. Added square inches of braking surface offer obvious advantages — reduced pressure per square inch, longer life, smoother braking and less heating.

See the new Highway "Clipper" at your earliest opportunity. Watch for it on the highways, at busy shipping docks and freight terminals. Send for the new illustrated trailer and brake literature which tells about Highway's many points of superiority. Let your next trailers be Highways!

HIGHWAY TRAILER COMPANY, EDGERTON, WIS.

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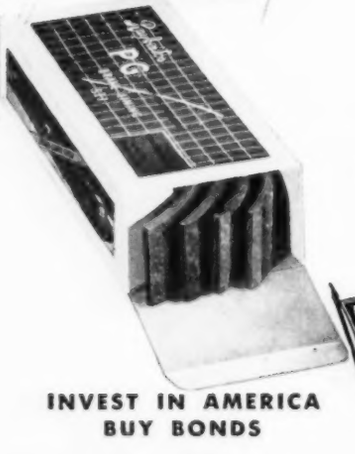
From horseless carriage to super-bomber, Raybestos has stopped them all. ★ Raybestos brake linings and clutch facings have won universal consumer acceptance because they are made of advanced materials, specially engineered for each make, model and job. They mean longer wear, fewer repairs, greater safety and dependability. ★ Raybestos' 40 year leadership is the result of providing constantly improved friction materials. And Raybestos' war-won know-how will make Raybestos still more profitable to you in the days ahead.

THE RAYBESTOS DIVISION of *Raybestos-Manhattan, Inc.*, BRIDGEPORT, CONN.



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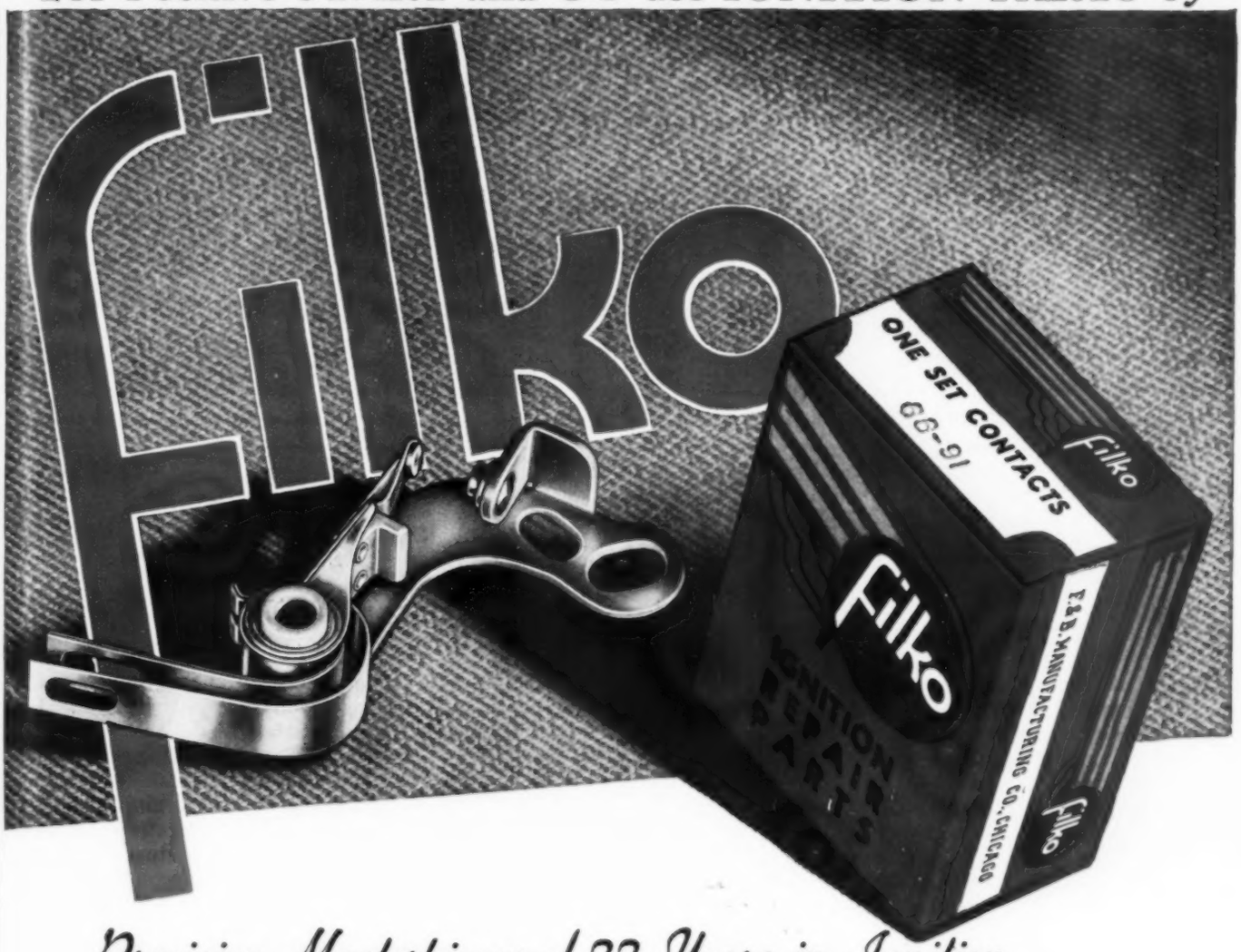
For Positive START and GO use IGNITION PARTS *by*



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for all car models since '26

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Why? Because Filko builds *extra value* into every contact set. From the precision of Filko's tungsten points to the perfect molding of the core, every step in their manufacture is performed by Filko craftsmen to Filko's higher standards.

Filko Contact Sets are available in standard and heavy-duty types with tungsten points, spun, riveted or welded as you specify. ASK FOR FILKO CONTACT SETS by name . . . it's good business for you *and* your customers!

F. & B. Manufacturing Company, 4248 W. Chicago Ave., Chicago, Illinois.

Filko **IGNITION PARTS** *for all Cars*

Distributor Repair Parts, Coils, Generator Repair Parts, Starter Repair Parts, Dimmer Switches and Relays, Timing Devices, Graphite Bronze Bushings for Generators, Starters and Distributors.

ALL ready to take off on a convoy drive, where they'll learn to haul trailers in company with other units—in just one week of training.

TRAINING TRACTOR-TRAILER DRIVERS

TRACTOR trucks in commerce haul giant trailers over the highways, moving thousands of tons of produce and goods to the nation's market centers. In the Army they haul the specialized trailers that are the heart of the Army's salvage, repair, and supply services.

A large number of the men who operate this equipment are trained in their work at Camp Lee, Virginia—the location of the country's largest Quartermaster Replacement Training Center. In the motor training division of the replacement center, truck driver trainees with special experience and ability are given instruction in manning the principal types of truck tractors and trailers employed by the Quartermaster Corps. (The shoe, clothing, and textile repair men and the laundry and sterilization specialists who operate mobile trailer units in the field are trained in the supply schools of the replacement center.)

ONE of the first things they learn is how to couple and uncouple a semi-trailer. Here the soldiers are watching a non-commissioned officer go through the operation. Later they do it themselves—many times.

•

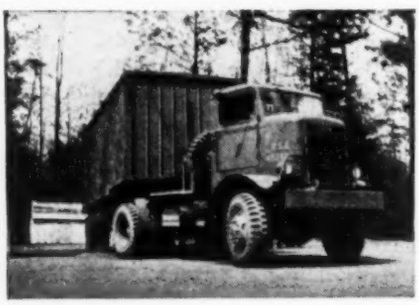
HOW THE ARMY, at CAMP LEE, IS TURNING OUT MANY GOOD DRIVERS, WHO'LL BE HANDY TO HAVE AROUND WHEN ALL THE SHOOTING IS FINISHED

Truck tractor operators learn their work quickly at Camp Lee. Selected from truck driver trainees for their past experience in driving tractor-trailers and any special ability shown in training, several dozens of men each week are put through the brief course.

Before being selected, of course, they have learned something about soldiering and about truck driving. Every Quartermaster soldier spends five weeks on the drill field, rifle range and bivouac, learning the fundamentals of close and extended order drill, rifle marksmanship, and the use of the gasmask. If assigned to truck driver training, he is taught in the operations section, commanded by Lieutenant Colonel John E. Mutty, how to accomplish preventive maintenance and lubrication on his vehicles, how to drive in convoy, how to make and read field maps, how to load a vehicle properly, and many of the other things a good Army driver needs to know.

The driver of a commercial truck-and-trailer who was trained as a heavy truck driver in the Army would find hmself driving much the same equipment as in civilian work. The training vehicles at Camp Lee include the 4-to-5-ton Diamond-T

(*Please turn to page* 151)



HERE is how they learn getting to and from loading platforms—and in and out of tight places. . . . They repeat the operation until they can do it smoothly. . . . The location is not far from Camp Lee.

THIS circular driving course would not be easy for a passenger-car to traverse but it's routine in the Army—to gain ease of movement and confidence, rather than to develop precision in driving.

TUNE IN "EVERYTHING FOR THE BOYS"
STARRING DICK HAYMES
EVERY TUESDAY NIGHT—NBC NETWORK

BUY WAR BONDS

AUTO-LITE Wire AND Cable

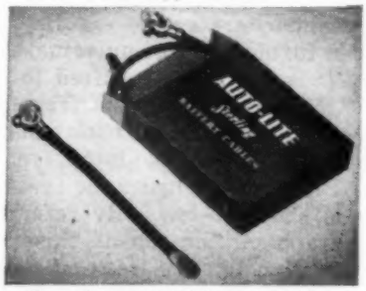
Stainless steel high tension cable and copper cable.

Spark Plug Cable sets in stainless steel and copper.

- SPOOL WIRE
- SPARK PLUG WIRES
- BATTERY CABLES
- TERMINALS
- LOOMS
- PORTABLE CORD
- ASSORTMENTS

Auto-Lite's wire and cable, famous for its low-cost dependability, is a complete line, built for every automotive use. Fleet operators can get more detailed information regarding its exclusive features by writing to their suppliers, or

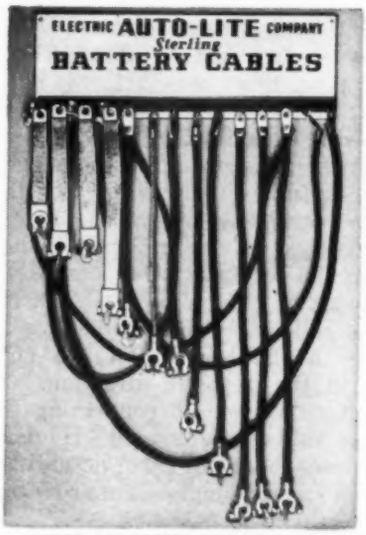
THE ELECTRIC AUTO-LITE COMPANY
TOLEDO 1, *Merchandising Division* OHIO



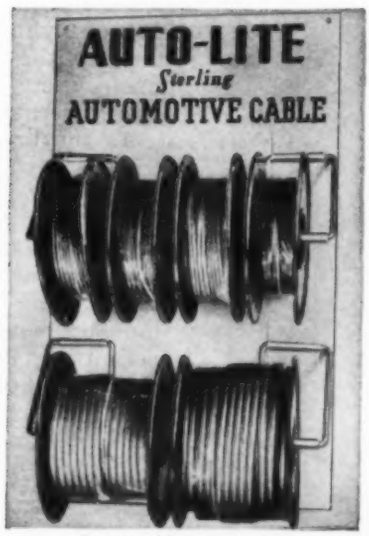
Ground straps and battery cable.

Primary wire in various sizes.

Loom in various sizes.



Battery cable assortment.



Spool cable assortment.

Combination wiring kit.

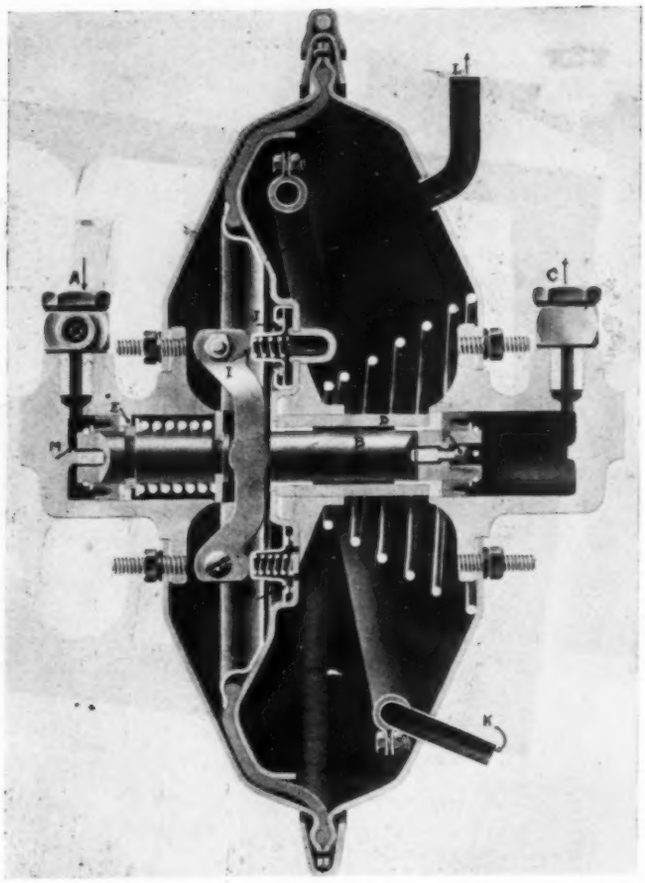
"VACDRAULIC"—*a New* BRAKE BOOSTER

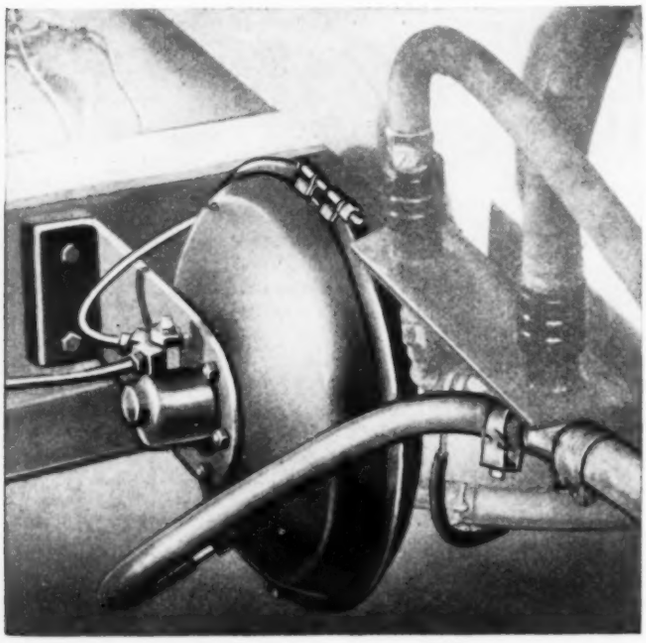
•

NEW ONE-UNIT VACUUM BOOSTER is A SELF-CONTAINED DEVICE for USE WITH HYDRAULIC BRAKES — HERE's THE LATEST DOPE on WHAT IT CONSISTS OF — AND HOW IT OPERATES

A NEW vacuum-operated power brake or "booster", for use with hydraulic brakes, was announced some time ago by Empire Electric Brake Company. Because of the fact that military demands have precluded the offering of this booster brake for civilian purposes, no previous mention had been made in these columns. The company is now formulating its post-war plans on this new product and has released complete details. The following description (and the illustrations) has been abstracted from the manufacturer's literature. We offer it for whatever it may be worth, as a "what-it-is-and-how-it-works" presentation, based solely on its merits as "news".

Called the "Vacdraulic" Booster, this new power brake unit was designed exclusively for use with hydraulic brakes. It is a self-contained unit that can be attached at any convenient point along the hydraulic brake line, between the master cylinder and the wheel cylinders. By supplementing the hydraulic pressure created by the driver's foot with vacuum produced in the intake manifold of the engine, the braking power of any hydraulic brake system is thus multiplied three or four times, according to the makers. When the engine is not running, the hydraulic brake works in the usual manner.





Typical truck installation of the Vacdraulic Vacuum Booster.

This new booster is furnished with universal mounting brackets. Only four steps are required to install it, as follows: (1) Mounting it on the frame. (2) Connecting it to the hydraulic line at both ends. (3) Connecting the vacuum line to the intake manifold of the engine. (4) Bleeding the hydraulic system. A typical installation is shown below. By referring to the cut-away photograph on the top of this page, a good idea of its operation may be secured. This is somewhat as follows: When the brake pedal is depressed, it first forces the hydraulic liquid from the master cylinder into the intake passage (A) and through the hollow control piston (B) to the brake line outlet (C), providing conventional hydraulic brake operation with no booster effect.

As the brake pedal is depressed further, the control piston (B) which runs through the center of the power piston (D), is forced to move toward the secondary end by the increasing pressure of the liquid against the primary end of the piston, which has a larger surface than the secondary end, because of the locking ring (E) back of the piston cup. As the piston (B) moves, the ball (F) is free to become seated, permitting the flow of fluid from (A) to (C), but checking the flow in the opposite direction. At the same time, the vacuum valve (G) connecting the two sides of the flexible rubber diaphragm (H) is forced to close by the movement of the valve actuating plate (I), so that vacuum can no longer pass from one side of the diaphragm to the other.

When the brake pedal is depressed slightly further

(*Please turn to page* 146)

FULL POWER
For Worn Motors

INSTALL

MOOG
X-PLUS
PISTON RINGS
U. S. Pat. No. 1,771,198

A Package of *FULL POWER*

TODAY, as never before, worn motors must be given new life to conserve gas and oil — provide smooth, care-free performance.

The outstanding performance of the Moog X-Plus Piston Ring set-up, especially engineered to give FULL POWER results, is the answer.

A different type ring for each groove — each ring has its job and does it — delivers FULL POWER. Write for FULL POWER Story and new streamlined X-Plus catalog.

TOMORROW'S RINGS TODAY

Complete Spring Suspension Service

MOOG *ELECTRICALLY* — **HEAT TREATED TESTED SPRINGS — WHERE SPRINGS ARE USED.**

MOOG *COIL ACTION* — **REPLACEMENT PARTS — WHERE FRONT END PARTS ARE USED.**

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1919 . . . 1944
25 YEARS
OF PROGRESS

MOOG INDUSTRIES, Inc.

◇ ST. LOUIS SPRING CO. ▭ MOOG PISTON RING CO.
MOOG COIL ACTION PARTS COMPANY

General Offices: 6650 EASTON AVE., ST. LOUIS 14, MO.
Warehouses in principal cities

SHOP HINTS

SALVAGES AXLE SHAFTS

● We operate a large fleet of dump trucks and have found it quite difficult in the recent past to obtain an adequate supply of axle shafts, so have learned how to salvage them from the scrap-heap. Here's how:

We save all broken shafts, and in an emergency we can usually find two broken pieces in our scrap pile from which we can make up a new one. If we find one piece with the flange good and another with the spline good, we saw the bad ends off each to the exact overall length of a new shaft.

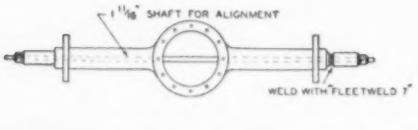
Then we bore a hole in the butt end of each piece and insert a steel dowel to a tight fit, and, after truing the job in the lathe, we electric-weld around the seam. We have not had a failure yet when using "manufactured" shafts like these.—*Jay E. Harris, Harris Incorporated, Little Rock, Ark.*

●

AXLE HOUSING REPAIR

● In many sections of the country, it is difficult to obtain new rear axle housings for trucks. D. R. Ware of Jefferson, Texas, devised the following method of salvaging old housings, when the threads on the end of the tubing are stripped, or when an axle has been broken and the truck towed in with the broken axle shaft left in the housing.

When this happens, the broken axle shaft usually freezes and sticks to the housing so tightly that it is impossible to remove it without cutting off the housing with a torch, in the center of the large bearing.



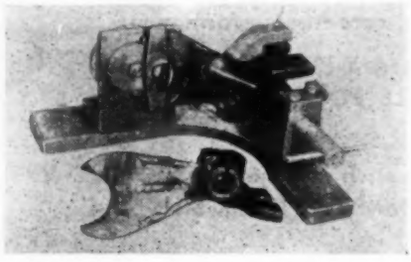
To repair these, Mr. Ware cuts off another old housing the same length as the broken one, V's out and aligns the end by inserting a piece of 1-11/16-inch shaft through the housing, or a piece of hollow tubing with sufficient stock to machine places for bearing thread and nut.

When the job is properly aligned, he welds a good bead with the electric arc, peens the weld, and continues until the V is filled up. He then builds up slightly where the bearings go, so that the housing can then be turned down so both bearings will be in line with each other. The job is then finished by building up metal in the way of the threads, and rethreading for standard nuts.—*Courtesy of Lincoln Electric Company.*

●

WELDS TRANSMISSION FORKS

● This timely shop hint comes from Clinton Stutter of the Department of Sanitation, City of New York, whose trucks sometimes break parts that are difficult to obtain.



Transmission shifter forks on 4-speed transmissions were a frequent offender, and Mr. Stutter's ingenuity was responsible for the design of this jig to maintain accurate alignment and spacing during welding of the broken forks.

The jig was built to accommodate first, second, third and fourth-speed forks of one make of truck of which they have 750. The layout of the jig for welding was made from a new set of forks.

The broken parts are first chamfered on a grinding wheel to an approximate 90° V on both faces. In most cases it was found that the metal had stretched from 1/16" to ⅛" and this extra length had to be ground away. The pieces are then clamped firmly in the jig and the arc-welding is done in the usual manner. Where clearance in the transmission allows, a few beads of weld are applied at right angles to the break, these acting as stiffening ribs.

These units are salvaged in groups of four or more forks. Preparation by grinding requires 30 minutes for four units; setting in jig and welding takes another 30 minutes. With labor cost of $1.40 per hr., power cost of 15¢, welding electrode cost of 4¢ and overhead of 14¢, a set of four of these forks can be reclaimed for a total cost of $1.73, compared to an original cost of $25.00 for a set of four new forks—a saving of $23.27 on each lot of four forks.

●

STRAIGHTENS CRANKSHAFTS

● Here is an interesting device for straightening crankshafts of bus engines, as illustrated and described by Sandy Santleben of the San Antonio Transit Company's fleet maintenance force, in a recent issue of the company's house magazine.

The device consists of two hangers, 29 inches long, made of 1 x 2-inch steel. The lower end of each hanger is bent to accommodate the crankshaft, which is supported in a lathe. The upper end of each hanger is closed over the base of a T-rail, which is used to support a 7-ton hydraulic jack, which exerts the straightening pressure.

The jack is placed at the proper point to straighten the bent crankshaft. When pressure is applied, the T-rail and supporting hangers hold the shaft firmly, so that straightening takes place at the right point.

Mr. Santleben claims that with this

equipment a crankshaft can be straightened in an hour and a half, with precision close to .002 inches. The device cost $9.00 for materials, and the fleet is now salvaging about 10 crankshafts per month with it.

CHRYSLER CORPORATION
PARTS DIVISION

MŌPAR

TRADE MARK

PARTS AND ACCESSORIES

FACTORY ENGINEERED AND INSPECTED

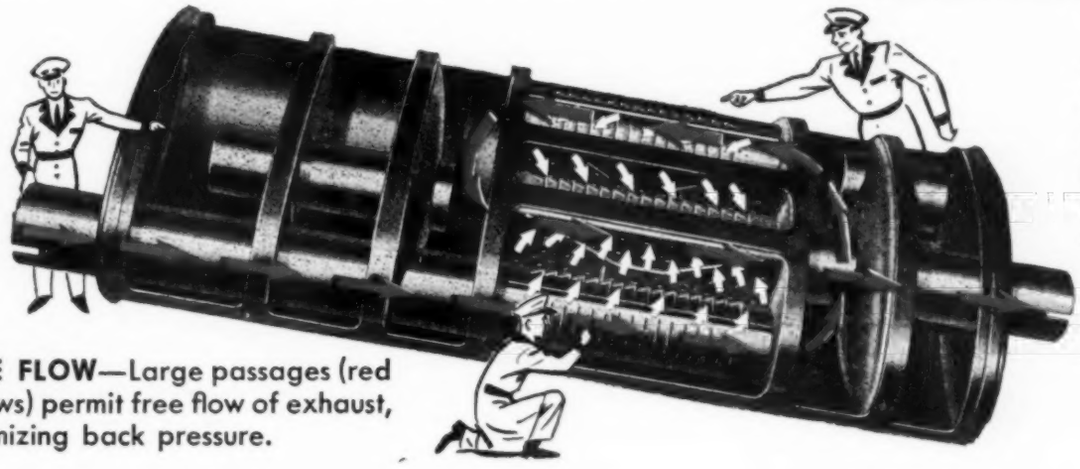
THE TRADE MARK "MŌPAR" IDENTIFIES PRODUCTS SUPPLIED BY CHRYSLER CORPORATION PARTS DIVISION

MUFFLERS for . .

- PLYMOUTH
- DODGE
- DE SOTO
- CHRYSLER
- DODGE *Job-Rated* TRUCKS

ASSURE GOOD SERVICE AND SATISFACTION TO YOUR CUSTOMERS

LONG LIFE—Rugged leakproof construction, plus exhaustive engineering tests, assure dependable, lasting service.



QUIETNESS—Throat design eliminates pitch or frequency noises. Cross flow interference breaks up other noises.

FREE FLOW—Large passages (red arrows) permit free flow of exhaust, minimizing back pressure.

Designed and Tested by Chrysler Corporation Engineers

You'll satisfy more Plymouth, Dodge, De Soto, and Chrysler owners by installing MŌPAR mufflers and muffler equipment. They're designed by Chrysler Corporation engineers for maximum silence and lasting good service.

NOTE TO ALL REPAIR SHOPS

If you need parts of any kind for a Plymouth, Dodge, De Soto or Chrysler car, obtain them from a dealer for these cars. For Dodge truck parts, see a Dodge dealer.

REPLACE PARTS ONLY WHEN NECESSARY—CONSERVE FOR VICTORY

CHRYSLER CORPORATION—PARTS DIVISION, DETROIT 31, MICHIGAN

BUY WAR BONDS

By Rotor Swift

WHAT DOES the LAW SAY?

THERE are many legal principles which no fleet owner can afford to ignore, and these rules *can* be explained in simple language, without resorting to the jargon of the courts. . . . This department will undertake to explain such general points of law, without using any legal terminology. . . . Each one is based upon an actual American court decision but all names are fictitious.—Ed.

The Washington "Round-Up"

THE night was dark, a heavy shower was brewing, and a Washington tourist stopped on the right-hand side of a Washington highway to put up his top. . . . A Washington truck driver pulled to the same side of the road and stopped behind the automobile for the same purpose. . . . Then another automobile drew up and stopped behind the truck. . . . Then a third automobile, coming in the opposite direction, stopped on its right-hand side of the road nearly opposite the truck. . . . All lights were on and there was room to pass in the middle of the road.

Then a fourth automobile, travelling in the same direction as the third, attempted to pass between that car and the truck. The driver applied his brakes too sharply, and skidded and injured the truck driver.

"You had no right to stop where you did, and if you're entitled to damages, the driver of the third automobile is the man you should sue," the driver of the fourth automobile contended, when the truck operator brought him into court.

"Any driver has the right to make a reasonable use of the highway for examining, adjusting or repairing his car, and other drivers are bound to use reasonable care to avoid injuring him," the truck driver's lawyer contended. . . . And the Washington Supreme Court ruled that the truck operator could recover damages.

The Texas "Repossession"

THE Lone Star Fleet (operating in Texas where a state statute requires that on the sale of any motor vehicle the "license fee receipt" shall be delivered to the purchaser) delivered a second-hand truck to a dealer to be sold conditionally. That is, the title to the truck was to remain in the Lone Star Fleet until it had been fully paid for by the new owner, and the license fee receipt was not delivered to the purchaser (a dealer).

The dealer sold the truck in due course, received part of the payment in cash and a chattel mortgage for the balance, and then became insolvent without accounting to the Lone Star Fleet. . . . Then the Fleet sued for possession of the truck.

"You should have delivered the license fee receipt and I should have insisted on it, so the rule that the law will leave both parties to an illegal transaction where it finds them, applies to our case," the new owner contended. "That might have been true, if you'd paid cash in full, but I retained title through the mortgage which makes it a conditional sale to which the statute doesn't apply," the fleet attorney demurred.

And the Texas courts in a recent decision, ruled that the former owner could recover possession.

●

The Minnesota "Intersection"

STRICTLY speaking, a highway intersection is where one street or highway cuts another, so that the crossing may be approached from four different directions.

Consider, however, the case of the Minnesota truck driver who was driving on a street which met but did not cross a through street, and collided with another truck at the point where the two streets came together. . . . If the "locus" of the collision was an "intersection" within the meaning of the Minnesota law, then the first truck driver was safe, as far as damages were concerned. If not, then he was in the wrong.

"It was equally necessary for you to watch out, whether my street ran into or across yours, and the law is equally applicable thereto," the first truck driver maintained. . . . "No—there can't be an intersection unless each street crosses the other," the second truck driver persisted, but the Minnesota Court, in a case reported recently, ruled in favor of the first truck driver, and in a case along the same line the Virginia Courts said:

"The danger of collision between traffic, at the junction of roads, is the same in character at the junctions of roads as at cross-roads, insofar as the danger arises from lack of determination of which line of traffic has the right-of-way, when both cannot pass in safety at the same time."

●

All "Corners" Are Alike

"*WHEN turning a corner of intersecting streets, avenues, boulevards or public places, or when traversing a curve or turn in a street, avenue, boulevard or public place where the view is obstructed, the rate of speed shall not be greater than six miles per hour,*" a Missouri ordinance provided.

A Missouri truck driver came to a corner where the view was *not* obstructed, failed to slow down to six miles per hour, and a motor policeman gave him the usual ticket. . . . "I was bound to slow down only when the view is obstructed," the truck driver stated. . . . "No—the ordinance applies to *every* corner, obstructed or otherwise," the policeman informed him. . . . And the Missouri Court announced that the policeman was right.

"We think the ordinance, considered from the viewpoint of its grammatical structure alone, clearly means that, in the operation of automobiles in the city of St. Louis, when turning a corner of intersecting streets, avenues, boulevards, or public places, the rate of speed shall not be greater than six miles per hour, whether the view be obstructed or not," the court said.

"A War Baby DOING A SWELL JOB"

"Here is a picture of a 'war baby' doing a swell job," writes Ben F. Kirschenbaum of Neptune Storage, New Rochelle, N. Y., who sent us this photograph of their 1944 Fruehauf, a recent addition to Neptune's fleet.

This Warehouseman's Van, 1600 cu. ft. capacity, is used for long-distance hauling of plywood tubing from the plant of the United States Plywood Corporation to processing factories in the midwest and south where it is readied for special jobs on the fighting fronts.

"The loads carried and the schedules maintained are rugged tests for any equipment."

Mr. Kirschenbaum continues, *"This unit has been on the road for several months and has really been doing a grand job. Because of the experience we have had with other Fruehaufs, we know we can count on this new Trailer to give yeoman service."*

★ Thousands of Fruehauf Trailers in olive drab are doing duty on battle fronts around the globe. Meanwhile, thousands more in civilian dress carry on here at home, where fast, flexible transportation is the primary requisite of mass production.

These new Fruehaufs, in battle garb or in "civvies," are backed by the pledge made to Fruehauf's first customer over 40 years ago — *that nothing short of THE BEST would ever carry the Fruehauf name!*

FRUEHAUF TRAILER COMPANY, DETROIT

World's Largest Builders of Truck-Trailers — *Service in Principal Cities*

Fruehauf Trailers

"Engineered Transportation"

REG U S PAT OFF

In every part of these sturdy jacks—

THE CAP TAKES THE RAP
Walker forges this one-piece CAP and extension screw from high-carbon steel . . . adds 45% more strength by heat-treating . . . coats it to prevent rust.

SOLID AT THE END, TO PREVENT BENDING
Walker drills out the cold-rolled steel RAM from the TOP . . . leaves the lower end SOLID to resist bending forces from off-center loads.

WHY 18 THREADS TO THE INCH?
Walker uses 18 threads per inch . . . not 17 or 19 . . . on this POWER CYLINDER, because only 18 threads effect a perfect seal with the base.

BASE OK BY X-RAY
Walker X-RAY INSPECTS the malleable iron BASE to make doubly sure these all-important castings are free from hidden flaws and imperfections.

YOU'LL FIND THAT
WALKER KNOW-HOW
has designed and built them for
STRENGTH • DURABILITY • SAFETY

● Examine *any* part of a Walker Series 900 portable hydraulic jack. You can *see* its scientific yet practical design. You can actually *feel* its fineness and precision.

In *every* part of these rugged tool-box jacks you'll find this same thoroughness of conception . . . this same fidelity to detail . . . this same careful selection of materials . . . this same exacting workmanship.

It is Walker KNOW-HOW—acquired through more than a quarter-century of building quality lifting equipment . . . Know-How that has earned for Walker the *leadership* in jacks.

WALKER MANUFACTURING COMPANY OF WISCONSIN • RACINE, WIS.
Also Makers of Exhaust Silencers and Electric Lifts

WALKER
Leads in
JACKS

The Fighting Heart of a Dayton Thorobred!

In every *battle-proved* Dayton Thorobred Tire you will find a fighting heart. It is a mighty combination of synthetic rubber and super-strong heat-resisting Raytex Cords. They are welded by a special Dayton process into an inseparable union that takes the stress and strain of life-threatening road shocks, impacts and heat.

Highway Fleets are now getting mileage over mountain roads almost equal to their mileage from pre-war tires. They are running on Dayton Thorobreds. And under tough conditions.

Capacity loads. Tight schedules. High road heat! Record mileage! And Dayton carcasses are still good for many extra miles, after recapping. How come?

Because beneath Dayton's tough, resilient, rugged carcass is a fighting heart. It is a specially Dayton-processed union of synthetic rubber and high-tenacity *Raytex Cord welded together to fortify the mighty tire against cruel impacts and deadly blow-outs.

Raytex Cord, Rayon processed by Dayton, is lighter. It resists fatigue. It actually resists *more* heat, generates *less* heat and retains its strength longer at extremely high road temperatures.

Only a limited number of Dayton Thorobreds are available for the use of bus and fleet operators. So, it will pay you to ask first for Dayton Thorobreds. They are the prime product of Technical Excellence in synthetic rubber development. Yet their priceless quality costs you nothing extra.

TIRES by Dayton Rubber

REG. TRADE MARK THE DAYTON RUBBER MFG. CO.

The Mark of Technical Excellence in Synthetic Rubber

THE DAYTON RUBBER MFG. CO.
Co-Operators of
a Government Synthetic Rubber Plant
DAYTON 1, OHIO

Maintain Victory Speeds—Conserve Your Tires

**Dayton-processed rayon cord*

WHAT DO YOU WANT IN POST-WAR TRUCK BODIES?

NOW is the time to voice your opinion as to what you'd like in *post-war* truckbodies. To begin with, we are discussing body hardware—a subject that has brought many "gripes" from fleet men in the past.

In answering the questions, please try to give your views and opinions just as they were in *peace* time. In other words, forget that there is a war on, for the time being, and give us your *pre-war* experiences.

This might appear as a mighty complicated blank to fill out; after you look it over, you'll see that it's really *easy*, as we have practically "*put the words into your mouth*" and you just need to make check-marks.

Since this is the *first* of our new "post-war" series of fleet experience surveys, let's have *lots* of replies. In return for your help you'll get a copy of the *confidential* summary which it brings . . . *Thanks.—Editor.*

(Please tear out and mail to The Editor, Fleet Owner, 90 West St., New York 6, N. Y.)

Question No. 149 — Body Hardware

Which kind of *truck* bodies do you use *mostly*? ☐Stock bodies; ☐Custom-built bodies; ☐Build our own

Do you specify the *type* of hardware used in custom-built (or home-built) bodies? ☐Yes; ☐No

Do you specify the *make* of hardware used in custom-built (or home-built) bodies? ☐Yes; ☐No

What difficulties do you have with door locks, latches, hinges and other hardware? *(Please check below)*

☐Latch springs break; ☐Handles, levers break; ☐Latches, plates wear; ☐Latch mechanisms bind;
☐Hinge-pins rust and stick tight; ☐Lock-cylinders clog up and rust; ☐Hinges get bent and sprung; ☐Hinge-pins wear out quickly;
☐Hinge fastenings loosen up; ☐Hinge construction too light; ☐Locks and latches too light; ☐Door-checks wear out quickly

Other difficulties, not mentioned above?.....

Which type of *latch* do you prefer for *rear doors* of vans and other truck bodies? *(Please check below)*
☐Inside, spring-type latch; ☐Outside, bar type; ☐Ice-box type; ☐Other type?.....

For *rear door* hinges, what type of hinge material would you prefer? *(Please check below)*
☐Cast-steel; ☐Rolled or forged steel; ☐Malleable iron; ☐Sheet steel (piano-type)

For *cab door* hinges, what type of hinge material would you prefer? *(Please check below)*
☐Cast-steel; ☐Rolled or forged steel; ☐Malleable iron; ☐Sheet steel (piano-type)

What type of *fastener* would you prefer for tying down tarpaulins and other covers? *(Please check below)*
☐Plain hook; ☐Patent hook; ☐Ring; ☐Cleat; ☐Continuous bar around body

For cab windows, what type of regulating mechanism would you prefer? *(Please check below)*
☐Crank regulator; ☐Ratchet (bus) type; ☐Self-balancing type; Others?.....

For vans and other truck bodies, what type of *rear door* construction do you prefer? *(Please check below)*
☐Full-height swinging doors, without tailgate; ☐Full-height swinging doors, with lower tailgate; ☐Upper ⅔ swinging doors and lower ⅓ tailgate;
☐Horizontal-fold upper doors and lower tailgate; ☐Overhead door that slides into body; ☐Other construction?.....

Which *make* of body hardware would you prefer, if you had your choice?.....*(Confidential)*

REMARKS: *("Griping" is in order here, too)*.....

.....

.....

How many vehicles in your fleet? *(Please indicate below)*

Trucks..... Tractors..... Trailers..... Pass. Cars..... Buses..... Miscellaneous.....

Mail THIS COUPON FOR FREE SURVEY

Name of Firm.....
Address .....
City and State.....
Your Name .....*Position*.....

HOW MANY TIMES HAVE YOUR TRUCKS DRIVEN AROUND THE WORLD?

The mileage on your trucks is enormous. And they've still got a long way to go, till new trucks are easy to get. But you can keep your motors at peak efficiency by replacing worn parts with genuine McQuay-Norris parts . . . Altinized Engineered Set Piston Rings and other parts from the complete McQuay-Norris line . . . parts engineered specifically for each make and model of truck.

McQUAY-NORRIS
ALTINIZED
Engineered Set
PISTON RINGS

McQUAY-NORRIS

PISTON RINGS • PISTONS • PINS • VALVES
BOLTS • BUSHINGS • SILENT-U SHACKLES

TIME TESTED
McQUAY NORRIS
AUTO PARTS
PROVEN IN SERVICE

BEARINGS • SLEEVES • PUMP PARTS
WHEEL SUSPENSION PARTS

WMC Gives "Green Light" on Conversion

CHAIRMAN McNutt of War Manpower Commission recently gave the green light to planning engineers and technicians, for blue-printing reconversion of the nation's industries to civilian production. . . . Sufficient advance planning for the resumption of civilian production, he said, will minimize the severity of reconversion shock. . . . Release and assignment of personnel to plan reconversion now will permit resumption of civilian production at the very moment that manpower, facilities and materials not needed for urgent war production become available.

•

Car Makers Prepare to Resume

THE Detroit regional director of WPB has announced that approval was recently granted to three automotive manufacturers to engage in preparatory work toward resumption of automobile production. . . . Applications of Chrysler Corporation, Fisher Body Division of General Motors and Ford Motor Company, each involving less than $25,000 a month, were approved by the regional office under Priorities Regulation No. 23 involving experimental models.

•

General Motors Will Produce in 90 Days

GENERAL Motors Corporation will require 90 days to get car production started, after their plants are released from war production and cleared of government machinery and materials, president Wilson recently stated. . . . The company's biggest reconversion problem, he said, will be the getting together of certain "bottleneck" machine tools without which no car production will be possible. . . . These machine tools were ordered only 30 days ago and to date the Corporation has been unable to get any promise for delivery, he said.

•

Perkins Heads IHC Fleet Sales

THE appointment of W. K. Perkins as assistant manager of sales in charge of national account and fleet sales, is announced by P. V. Moulder, general manager of International Harvester Company's motor truck division. . . . Mr. Perkins' 20 years of International truck sales experience and his wide acquaintance in the automotive industry provides an excellent background for his new and important duties.

New Reo Branch in New England

REO Motors, Inc., announces the opening of a direct factory branch at Manchester, N. H., with K. W. Wright as branch manager. . . . This addition to Reo's New England facilities is part of a long-range program to enable the company to better serve the truck and bus industry, both now and post-war. . . . Mr. Wright has been in the industry since 1922, having formerly been connected with White and Autocar and also as superintendent of maintenance for a large bus operation in New England.

•

YES, truck production lines are "humming" once more. . . . Here's a shot of Diamond-T's truck plant showing the first civilian job to roll off the production line since production was stopped in January of 1942.

•

Walker Heads New Trailmobile Branch

THE Trailer Company of America recently announced the appointment of Charles T. Walker, formerly with the ODT, as manager of its new Cincinnati branch. . . . In the heart of the Cincinnati trucking district, the new branch covers an area of over 25,000 sq. ft. and is completely equipped for trailer repair and maintenance service. . . . A complete stock of parts is carried, and a special feature of the service center is a lounge for the convenience of truck drivers.

•

IHC Appoints Southern District Mgr.

W. C. SCHUMACHER, Manager of Sales, Motor Truck Division, International Harvester Company, has announced the appointment of Karl W. Freeman as Southern District Manager. . . . Prior to his new appointment, Mr. Freeman was the Company's branch manager at Atlanta, Georgia. His service with Harvester began at Des Moines, Iowa, in 1925. Since that time he has served at the Council Bluffs, Amarillo, and San Antonio branches.

Metropolitan Body Gets Army-Navy "E"

AWARD of the Army-Navy "E" pennant was made last month to the Metropolitan Body Company, Bridgeport, Conn., for excellence in war production. . . . The company during peace-time manufactured the well-known "Metro" double-capacity body for light trucks, the entire output of which was sold exclusively by International Harvester. . . . Metro's wartime products include gun shields for the Navy and radar equipment cabinets. . . . The "E" flag was presented by Rear Admiral Wat. T. Culverius and was accepted for the company by Philip Carlson president, and Irving Abb, president of the C.I.O. union.

•

Studebaker Reveals Post-War Plans

THE Studebaker Corporation has revealed its post-war plans for doubling its 1941 automobile production at what company executives hope will be little increase in prices. . . . "We don't accept the necessity of a 25 percent to 30 percent increase in the price of post-war cars," President Hoffman told a press conference recently. . . . The company has already placed orders for standard machine tools, which it expects to be delivered about the middle of November.

•

New Mack District Mgr. in South

THE appointment of J. A. Bascle, Jr. as district manager for the Louisiana, Mississippi and southern Alabama area has been announced by F. F. Staniford, president of Mack-International Motor Truck Corp. . . . Since 1941 Mr. Bascle had served the company as a salesman for Mack marine engines in the New Orleans territory. In this capacity he established the New Orleans branch as one of Mack's leading outlets for marine engine sales.

•

Pease Now Assistant Sales Director

FORD Motor Company recently announced the appointment of Alan B. Pease, for many years a sales executive, to the new post of assistant director of sales. . . . In this capacity, he will assist Jack Davis, director of sales and advertising, in readying the Company's sales organization for post-war operations. . . . Mr. Pease has been with Ford for 33 years.

AVAILABLE THROUGH YOUR AC WHOLESALER

PROTECTION

FOR THE HEART OF THE FUEL SYSTEM

You get reliable performance and long life from your AC Fuel Pumps because *the quality is built in,* from blueprints to finished products. You will best protect that performance and durability if you install AC Authorized Factory Rebuilt Pumps (when replacement is necessary), or rebuild your present pumps with AC Diaphragm or Parts Kits.

AC FUEL PUMPS

8 REASONS WHY AC PUMPS AND PARTS ARE SAFEST

- ★ Careful control of pressure and flow assuring correct fuel supply.
- ★ Accurate hardening, precision machining of parts essential to long life.
- ★ Accurate control of spring tensions and temper.
- ★ High, and controlled, pin hardness.
- ★ 4-layer, patented-impregnation diaphragms of special airplane cloth.
- ★ Carefully finished rocker arm pads, located to center on cam.
- ★ Split-hair rocker arm clearance and control of pad hardness.
- ★ Uniform pull rod hardness at pin holes.

SEND FOR AC SHOP MANUALS

Field Service Department, AC Spark Plug Division, G. M. Corp.
910 Union Industrial Building, Flint, 3, Michigan FO-10

Gentlemen: Please send at once, no charge, the AC Shop Manuals checked:

- ☐ How to Service Spark Plugs
- ☐ How to Service Spark Plug Cleaner
- ☐ How to Service Oil Filters
- ☐ HOW TO SERVICE FUEL PUMPS
- ☐ How to Service Air Cleaners
- ☐ How to Service Speedometers
- ☐ How to Service Ammeters and other Instruments

NAME_____

FIRM_____

STREET ADDRESS_____

CITY_____ STATE_____

263. New "Guide to Gears" In 8-page Booklet Form

The June issue of Texaco's magazine, "*Lubrication*" is devoted exclusively to an 8-page illustrated discussion on automotive gears, with a chapter on correct lubrication thrown in. . . . Illustrated and described, with cutaway photos and drawings, are automotive gears of *all* types, including transmission, rear axle, double-reduction, worm-drive, hypoid, etc. . . . While we realize that experienced fleet men who read this publication are thoroughly conversant with much of the material in this booklet, it is felt that those *new* hands you are breaking-in will find much in it of an *educational* nature. . . . Extra copies of the issue containing this have been reserved for those fleet men who will mark Number 263 on our post-card. It comes *by mail* and is free.

•

264. "Quick Reminder" Folder Covers All ODT Regulations

A handy guide to ODT operating reqirements which affect truck and bus operators, is offered by Studebaker in the form of a "*Quick Reminder*" folder that will just slip into your pocket. . . . In simple, tabulated form it tells you all you need to know regarding the keeping of truck and tire records, reports to be filed, gasoline rationing regulations, etc. . . . It also covers ODT's latest simplification of records and reports. . . . Free copies will be mailed to those fleet men who mark Number 264 on our post-card; also a copy of "*Wartime Information for the Delivery Truck Operator,*" if you haven't yet had one.

•

265. Shop Manual on How to Service Spark Plug Cleaners

Many fleet shops are equipped with an AC Spark Plug Cleaner, and it is likely that, what with the rush of war work, the fellow who used to know how to service it is probably in the Army—or else you've lost the instruction book. . . . Here is your chance to brush up and put your cleaner back in working order. . . . AC Spark Plug Division offers, *free*, a 48-page, illustrated manual that really "goes to town" in giving service data on its cleaning machines. . . . For your free copy, mention Number 265 on our post-card and one will be mailed quickly.

•

266. Motor Fleet Handbook on Fan Belts & Radiator Hose

For more than 25 years, this handbook on fan belts and radiator hose has been used as a "bible" by many automotive operators. . . . In the new 1944-45 edition, a special section is devoted exclusively to the needs of motor fleets. . . . It tells you all you need know about belt and hose sizes, specifications, interchangeability, etc. . . . Yes, there *is* a paper shortage, and the supply is limited; so better mark Number 266 on our post-card and mail it, if you'd like a free copy.

•

267. Data on Tire Repair Patches and Other "Speaker" Items

This catalog is one of those "wartime" jobs that doesn't waste your time, since it lists only stuff that is *immediately* available and includes various types of tire patches—hot patches for tubes, vulcanizing outfits, boots and other kinds of casing repair patches. . . . Also available is a booklet, "*Speaking of Speaker*" which gives you a look-in at the Speaker factory and tells you about a new "vest-pocket" stove that is making history with the boys over there. . . . Number 267 on our post-card will bring free copies of *both* booklets, by mail.

•

268. Picture Poster Tells How to Mount Synthetic Tubes

Here is something that you can tack on the bulletin board. The pictures in it are large, the instructions are plain, and it doesn't take up much space. . . . It's a pictorial story on how to properly mount synthetic rubber tubes, measuring just 8½" x 11" over all. . . . Step-by-step operations (four in all) are described and pictured. . . . For your free copy (*or a number of them—state how many*) just mark Number 268 on our post-card.

•

269. Planning Post-War Trucks? Here's Your Body Data—

Practically everyone has some new ideas as to what he wants in post-war trucks and much of the improvements in mind center around body construction. . . . In order to help post-war planners—and even wishful thinkers—the makers of Lindsay-Structure have issued a new folder covering both "packaged unit" truck bodies, and a special L-S body engineering service for fleets. . . . Free copies will be promptly mailed to fleet men who mark Number 269 on our post-card.

•

270. Recapping and Repairing Manual on Synthetics

Although especially designed for tire dealers and recappers, fleet men will find much of interest in a booklet entitled "*Recapping and Repairing Tires and Tubes—Synthetic and Crude,*" recently issued by U. S. Rubber. . . . Graphically illustrated with step-by-step directions on how to handle the new synthetic materials, the manual goes into every detail of repairing and recapping. . . . A special chapter is devoted to the repair of synthetic tubes—which most fleet operators are now called on to do. . . . For a free copy just mark Number 270 on our post-card; it comes by mail.

•

271. Correct Wheel and Tire Combinations on Wide-Base Rims

Wide-base rims are apparently here to stay, and the indications are that the supply of replacement rims is getting better and better. . . . If you haven't as yet looked into the advantages promised by the use of wide-base rims, the National Wheel and Rim Association invites you to examine their new free booklet entitled "*Correct Wheel and Tire Combinations for 1944.*" . . . This booklet gives quick-finding data indicating the proper wide-base rim and tire combination for every popular size truck and bus tire. . . . Number 271 on our post-card brings you a *free* copy.

•

272. Bulletin Tells "How to Repair Synthetic Tubes"

You can't have too much literature on the new synthetic tires and tubes, since changes are being made from day to day and one *must* keep up-to-date. . . . So, here is another booklet, the title of which is "*Repairing Synthetic Tires and Tubes,*" offered by Goodrich. . . . This four-page Service Bulletin is mostly pictures. It covers the following four subjects: (a) Cold-Patch Synthetic Tube Repairs. (b) Reinforced Vulcanized Tube Repairs. (c) Curing Chart for Reinforced Repairs. (d) GRS Synthetic Tire Repairs. . . . Get a *free* copy for your tire man, by marking Number 272 on our post-card and mailing it.

FREE SHOP BOOKLETS TO HELP KEEP 'EM ROLLING!

THE CHOICE OF BETTER MECHANICS

Snap-on Tools
FOR PRODUCTION AND SERVICE

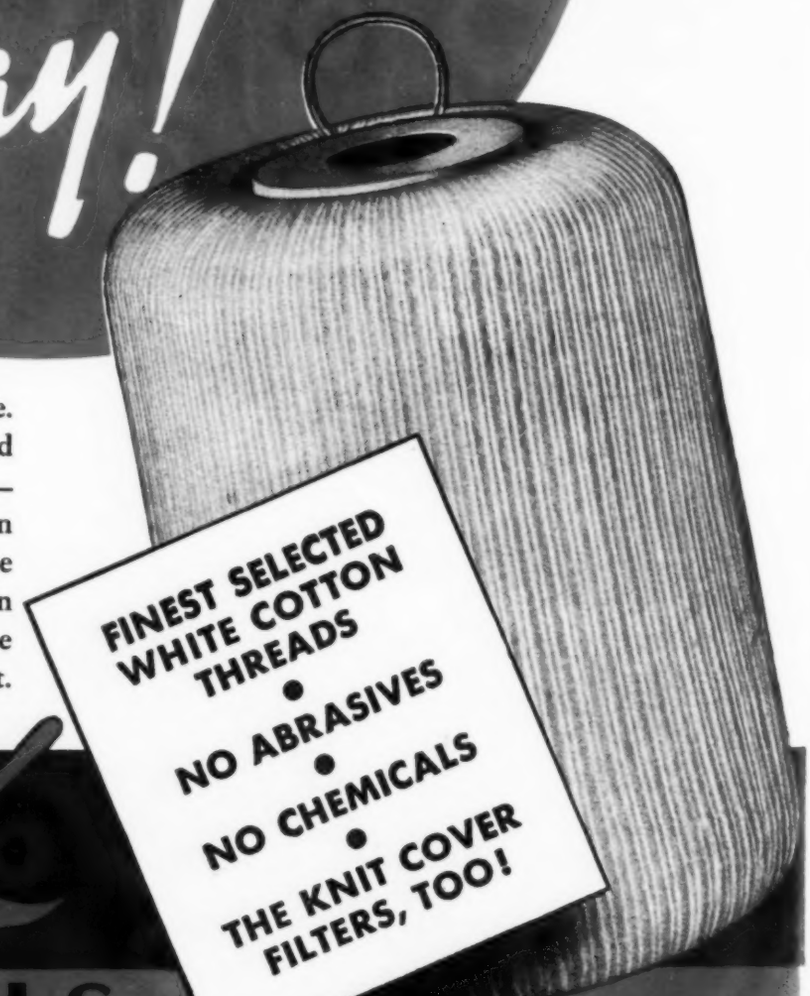
Snap-on revolutionized nut turning with interchangeable sockets. No name in tools means as much in adding speed, precision and safety to every phase of production, maintenance, service.

SNAP-ON TOOLS CORPORATION • 8066-J 28th Avenue • Kenosha, Wisconsin

PROTECTED LUBRICATION KEEPS PAYLOADS ROLLING

Tomorrow's OIL FILTER REFILL today!

Here's the new day Oil Filter Cartridge — tailor made for motor freight transport service. Because WIX is engineered to take hard going and keep oil and motors cleaner—longer! It's all muscle and no fat—even the Knit Cover filters, too! WIX not alone costs less, but does more—put it to work in YOUR motors. There's a size and type precisely designed to fit your equipment.



wix TRADE MARK

FILTEREFILS

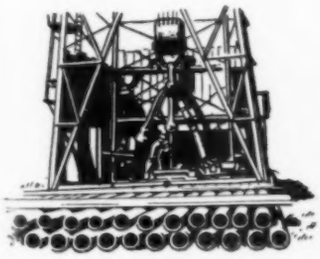
WIX ACCESSORIES CORPORATION • GASTONIA • N·C·

Warehouses: ATLANTA • CHICAGO • DALLAS • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • NEW YORK • SAN FRANCISCO • Canadian Factory: WIX ACCESSORIES CORP. LTD., 161 BAY ST., TORONTO, ONT.

In the eleven western states, an estimated 90 per cent of all franchise-operated, long-line, heavy-duty, diesel-powered trucks on the highways—freight and tank—are Cummins Diesel-powered. Diesel truck registrations in California alone number more than 4,400.

In the Northwest Woods, Cummins Diesels do the complete job—from show to siding. They power yarders, loaders and tugs . . . trucks that handle up to 240,000 pounds (three carloads). In this service, Cummins Diesels are the symbol for "cheap logs."

In the commercial fishing fleets of the Pacific, Atlantic and Gulf coasts, and in all types of work boats and pleasure craft, Cummins Marine Diesels—propulsion engines and generating sets alike—have become a byword for dependable, low-cost performance.



In the vast Mid-Continent area, the world's greatest oil producing territory, Cummins Dependable Diesels power more rotary and cable tool drilling rigs and oil well service units than any other make of diesel engine.

Step by Step

Tremendous weight and size greatly limited the uses of early-day diesels. Twenty-six years ago, the builders of Cummins Diesels decided to do something about that—and did! Step by step, and with *each step first tested and proved on the job*, they simplified design . . . improved construction processes . . . turned to lighter, stronger materials . . . steadily boosted the rpm. That, briefly, is the story of the modern Cummins Diesel . . . the *original high speed diesel* that, since 1932, has won its spurs on the toughest, heavy-duty jobs . . . in virtually all types of heavy-duty equipment, automotive, industrial, marine. For tomorrow, continued refinements in diesel manufacture promise a Cummins Dependable Diesel that will do your job still cheaper, still faster, still longer. So plan now to standardize on Cummins Diesel power for the equipment you will build or operate after the war. CUMMINS ENGINE COMPANY, INC., Columbus, Indiana.

THE Kingham-Universal Plymetl Body, mounted on the new and improved Kingham R-30 Chassis, forms a trailer unit of unusual dependability and ruggedness as well as beauty and light weight.

This unit has been tried and tested. It meets the exacting demands of the trucking industry for a single unit that will adequately resist the strain, shock, and vibration of day-in and day-out punishment on the road.

Before you purchase your next equipment be sure to carefully consider the extra low-cost miles built into this dependable, rugged, light-weight Kingham Trailer.

Descriptive literature and sample of Plymetl sent free upon request.

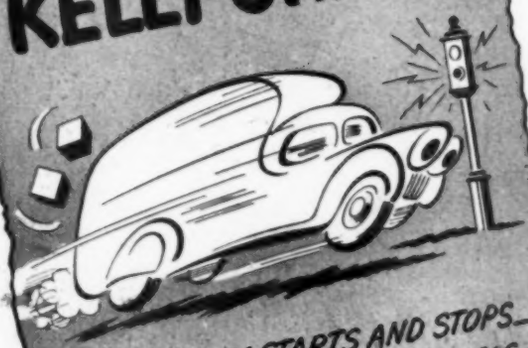
See your nearest Kingham distributor or write direct to us.

"A Load behind is a Trip Ahead."

RUGGED Dependable LIGHT-WEIGHT

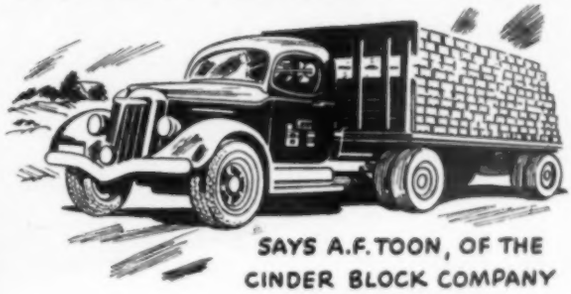
KINGHAM TRAILER COMPANY
INCORPORATED
LOUISVILLE, - - - - KENTUCKY

KELLY-GRAMS



AVOID JERKY STARTS AND STOPS—SPINNING OR SLIPPING WHEELS GRIND OFF GOOD RUBBER!

"AFTER USING VARIOUS MAKES OF TIRES, WE FOUND THAT KELLYS GAVE US SUPERIOR SERVICE—NOW WE MAKE IT OUR POLICY TO PURCHASE ONLY KELLYS."



SAYS A.F. TOON, OF THE CINDER BLOCK COMPANY RICHMOND, VA.

MAKE 'EM LAST— WIDER BASE RIMS IMPROVE TREAD MILEAGE AND TIRE LIFE. MANY OPERATORS FIND CHANGING FROM STANDARD TO WIDER BASE RIM INCREASES TIRE LIFE FROM 20 TO 30%...TIRES SEATED ON WIDER RIM BASES ARE SUPPORTED BY MORE AIR. FLEXING IS REDUCED AND BETTER DISTRIBUTED. TREAD RESTS COMPACTLY AGAINST ROAD. SCUFFING AND SLIPPAGE ARE REDUCED...IF THERE'S AN OVERLOAD WIDER-SPACED BEADS GIVE GREATER STABILITY. THE INCREASED AIR CUSHION LESSENS CARCASS STRAIN.

Kellys are Tough

KELLY *Springfield* **TIRES**

DEPEND ON THE KELLY DEALER FOR EXPERT REPAIRS, RECAPS, AND INSPECTION!

THE KELLY-SPRINGFIELD TIRE COMPANY, CUMBERLAND, MD.

TACHOGRAPHS are worth waiting for

The need and demand for Tachographs is big . . . and the supply is limited because war production continues to come *first* at Sangamo.

So, if you are not able to get all the Tachographs you would like to have at this time, take the word of operators whose entire fleets have been Tachograph equipped for many years. These men will assure you that Tachographs *are worth waiting for.*

AMAZING RECORDING SPEEDOMETER MAKES GRAPH OF EACH TRIP

An easily read graphic chart made by the operation of a Tachograph on a truck *tells all.* It records every movement of the vehicle, and by checking a chart taken from the instrument it is possible to tell the exact instant the driver started; just how long he stayed at any particular place; distance and speed traveled; and time elapsed between stops.

Readily installed on dash of any truck . . . Chart recordings are automatic, and data furnishes undisputable evidence of driver's efficiency.

Get complete information on this recording speedometer manufactured by Sangamo Electric Company and distributed exclusively by the Wagner Electric Corporation.

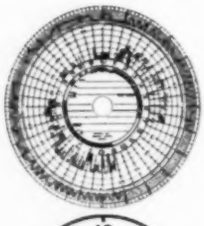


CHART from TACHOGRAPH SHOWS

TIME (OF OPERATION)

SPEED (IN M. P. H.)

DISTANCE (IN MILES)

Clip and Mail Coupon for Details

AUTOMOTIVE PARTS DIVISION 844-3

Wagner Electric Corporation

6480 Plymouth Avenue, St. Louis, Mo., U. S. A.

☐ Please send a copy of "Savings and Safety."

Name and Position.....

Office or Company.....

Address.....

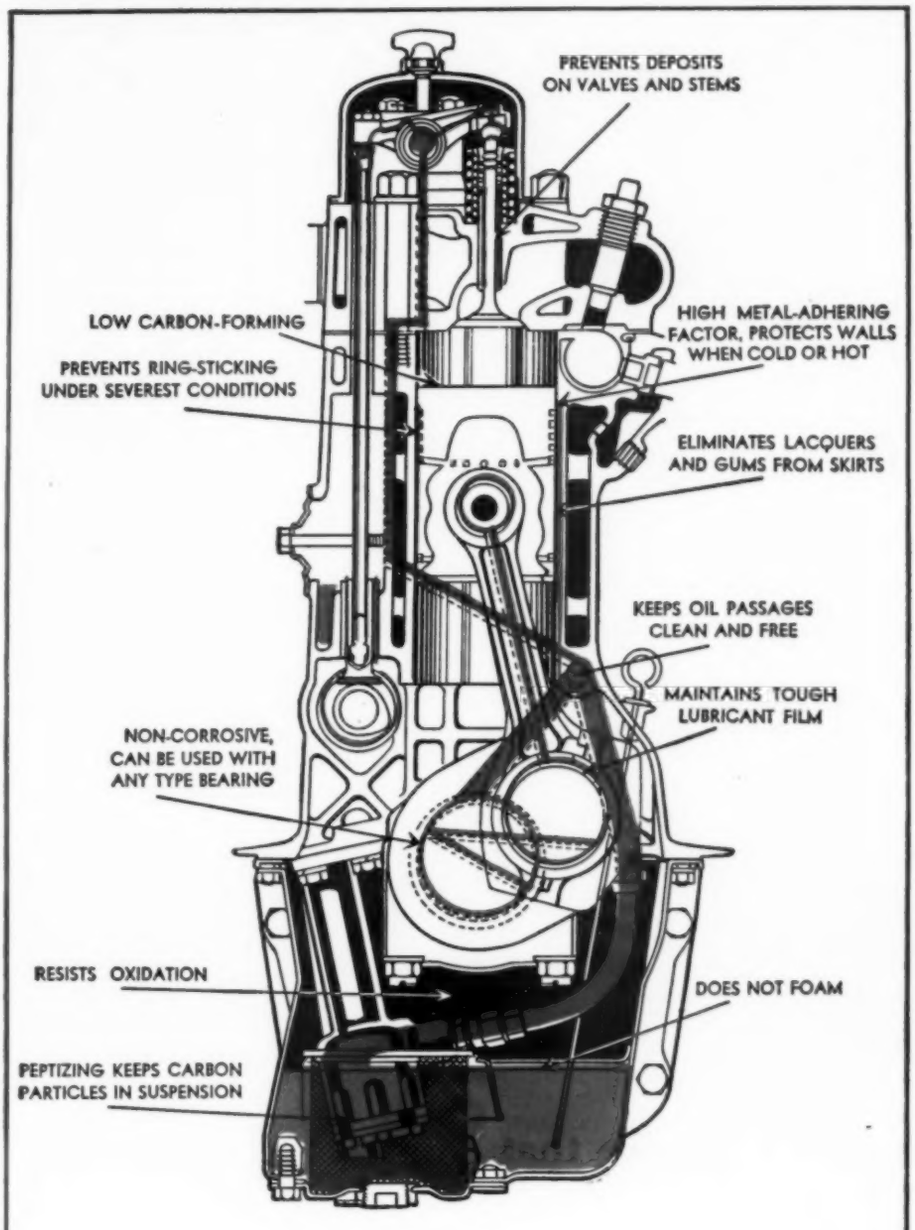
We operate.....trucks.

TYPICAL DIESEL LUBRICATION PROBLEMS:

4. Removal of Deposits from Engines

RPM DELO will clean your engine of sludge and other deposits, even in the ring-belt, unless accumulations of carbon, gum, varnish, etc., have cemented rings so tightly that oil cannot get behind them. The following procedure is recommended for purging conventional engine systems:

1. Drain present oil from crankcase while hot.
2. Renew filter element to trap abrasive particles that may be carried in circulation during purging.
3. Fill crankcase with RPM DELO.
4. Run engine at fast idle for two hours, maintaining water jacket temperature of approximately 200° F. minimum.
5. Drain again while hot and refill with RPM DELO.
6. Place engine in regular service and drain at one-half normal drain period or 750 miles, whichever comes first, for two or three drains. Check oil frequently as removal of deposits may temporarily increase oil consumption.
7. Drain while hot. Check oil filter and replace when necessary.
8. Refill with RPM DELO, returning to regular oil drain and filter change period, and continue to use RPM DELO.


PREVENTS DEPOSITS ON VALVES AND STEMS
LOW CARBON-FORMING
PREVENTS RING-STICKING UNDER SEVEREST CONDITIONS
HIGH METAL-ADHERING FACTOR, PROTECTS WALLS WHEN COLD OR HOT
ELIMINATES LACQUERS AND GUMS FROM SKIRTS
KEEPS OIL PASSAGES CLEAN AND FREE
MAINTAINS TOUGH LUBRICANT FILM
NON-CORROSIVE, CAN BE USED WITH ANY TYPE BEARING
RESISTS OXIDATION
DOES NOT FOAM
PEPTIZING KEEPS CARBON PARTICLES IN SUSPENSION

This diagram of a typical Diesel engine shows how RPM DELO keeps rings free and maintains clean operation.

RPM DELO is made from base oils especially selected for non-deposit-forming characteristics, and contains a detergent which keeps foreign particles in suspension. It also contains an anti-oxidant which prevents the formation of gums and lacquers. It is non-corrosive, may be used with any type of bearing.

RPM DELO has world-wide distribution and is marketed under the following names: RPM DELO, Caltex RPM DELO, Kyso RPM DELO, Signal RPM DELO, Sohio RPM DELO, and Imperial RPM DELO (Concentrate). Ask your Diesel engine manufacturer or distributor for the name of the RPM DELO supplier in your vicinity.

The typical cleanliness of engine parts when RPM DELO is used is illustrated by this oil filter removed from an engine used in heavy duty Diesel bus service for 50,000 miles. Oil pump screen and valve chamber were comparably clean.

RPM DELO

STANDARD OF CALIFORNIA

EXAMPLE OF *Service*:

Saved: 15% to 30% of daily fuel allotment... These amazing economies were made possible by the CITIES SERVICE POWER PROVER in a test of 4200 vehicles in 175 automotive fleets. In one simple operation this exclusive instrument measures engine efficiency... registers gasolene waste... enables your mechanic to track down and remedy the causes. For information about free POWER PROVER demonstration write to: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

More and more, it's service that counts...

and *Cities Service* means good service!

CITIES SERVICE OILS — ONCE-ALWAYS

CITIES SERVICE OIL COMPANY

ARKANSAS FUEL OIL COMPANY

FROM ALASKA TO CAPE HORN

Diesel engines are opening new frontiers — the frontier of industrial development, the frontier of growing military might, the frontier of an awakened hemisphere that teems with activity from Alaska to Cape Horn.

Their contribution? More flexible, more economical power where, when, and as needed. Diesels help build airports, provide power for mines, get out rubber in Brazil — do useful work everywhere.

An era of even more intensive Diesel use lies ahead — an era in which the Diesel engine builders of America will render world-wide service to transportation, industry, and commerce.

As a supplier of fuel injection equipment to engine manufacturers, American Bosch continues to provide competent maintenance service, the widest variety of equipment, and experienced counsel in application engineering.

AMERICAN BOSCH CORPORATION • SPRINGFIELD, MASSACHUSETTS

AMERICAN BOSCH

AVIATION AND AUTOMOTIVE ELECTRICAL PRODUCTS • FUEL INJECTION EQUIPMENT

O.D.T. NEWS

MUST USE NEW FORM

● District managers of ODT were recently instructed not to accept applications for the purchase of new commercial vehicles on the old form (WPB-663), as the new simplified form (ODT-663) is now available at all district offices. . . . The simplified form, which became effective on September 1, following transfer of rationing of commercial vehicles from WPB to ODT, must be used by all those applying for certificates of transfer to obtain new vehicles.

●

TOO MUCH SPEEDING?

● ODT and OPA officials are unduly concerned over the fact that many operators of large trucks and buses are exceeding the speed limit of 35 mph set by ODT Order No. 23. . . . Spot checks throughout the country, officials stated, have revealed that the worst offenders are those operators using large, high-speed tires, which are in particularly short supply at present. . . . State officials are being asked to check on this, so better watch out!

●

ODT RELEASES TWO FIRMS

● Last month ODT announced the release from Government possession and control of two of the 103 strike-bound midwest trucking firms taken over by ODT under an Executive Order on August 11. . . . The motor carrier transport systems released are the Meadows Transfer, Inc., Des Moines, Iowa and the Key City Transfer & Refrigerator Line, Dubuque, Iowa. . . . In announcing the action, Col. Johnson said there is no existing labor dispute involved in operation of the two firms affected.

●

CHECK BEFORE YOU BUY

● Prospective purchasers of used trucks were again urged by ODT to make certain, before acquiring a used vehicle, that their proposed operations meet all ODT requirements for a Certificate of War Necessity. . . . It's no certificate, no gas, you know!

PESSIMISTIC ON TIRES

● The severe shortage of heavy-duty tires has already caused a widespread curtailment of essential truck services, according to a recent ODT announcement. . . . The serious tank-truck situation was also pointed out, in announcing fourth-quarter allocations of heavy-duty tires by WPB. . . . The shortage is expected to continue into the last quarter and possibly to spread to the smaller sizes of truck tires, too, ODT said.

●

20 MORE CANCEL

● Twenty additional organizations, including many government agencies, have complied with ODT's request to cancel conventions or prevent their officials from attending them. . . . The Motor & Equipment Wholesalers Association, for example, has postponed its November convention and will hold one next February instead, by which time (we hope) this thing will be all over.

●

ODT's CAR WORRIES

● ODT is quoted as saying recently, in connection with more gasoline for civilian car operators: "It is absolutely necessary to keep all the facts of private car operation—gasoline, tires, repair parts—substantially in balance, in order to maintain the essential mileage of automobile use. . . . The margin of safety in the supply of cars is so narrow that we can't afford to gamble." . . .

●

MORE JOINT-ACTION PLANS

● More than 20 motor carriers operating in the midwest region have entered into new and approved conservation and joint-action plan agreements, ODT said last month. . . . In one plan seeking to save 41,900 truck-miles and 5,200 man-hours annually, in the Knoxville, Tenn., area, ten carriers have agreed to eliminate partly-loaded trips and to divert freight to each other. . . . Another plan involves ten carriers and a saving of 18,980 truck-miles annually between Chicago and Ft. Wayne.

GAS ALLOCATIONS DOWN

● Distribution among various classes of transport facilities of the automotive gasoline allocation for the last three months of 1944, was announced recently by ODT. . . . The fourth quarter allocation by PAW in response to requirements filed by ODT as claimant agency for all forms of domestic transportation, amounts to 1,013,000 barrels daily. . . . PAW advised that because of the continuing high level of military requirements, it was unable to meet East Coast requirements by 9,000 barrels daily, and West Coast requirements by 2,000 barrels daily.

●

LOCAL TRANSIT BURDENED

● Local transit systems in all sections of the country, except the northeast, continue to carry heavier wartime passenger loads with each succeeding month, ODT recently reported. . . . In the large eastern cities the peak of wartime traffic was reached several months ago and passenger volume has now levelled off, but in many mid-west and western cities, the increase has been four-fold, ODT said.

●

EXPORT FREIGHT EASED

● ODT orders simplifying permit regulations in connection with certain classes of export freight, were announced last month by ODT. . . . If you are interested in this phase of transportation, better look up the following: ODT General Order 16B; ODT Administrative Order 17A; and ODT General Permit 16B-1. . . . There's where the changes have been made.

●

BUS REQUESTS BEING MET

● With the 1944-1945 school term already opened in practically all sections of the country, ODT announced last month that requests from state educational officials for school buses to transport pupils to and from schools, had generally been met in full.

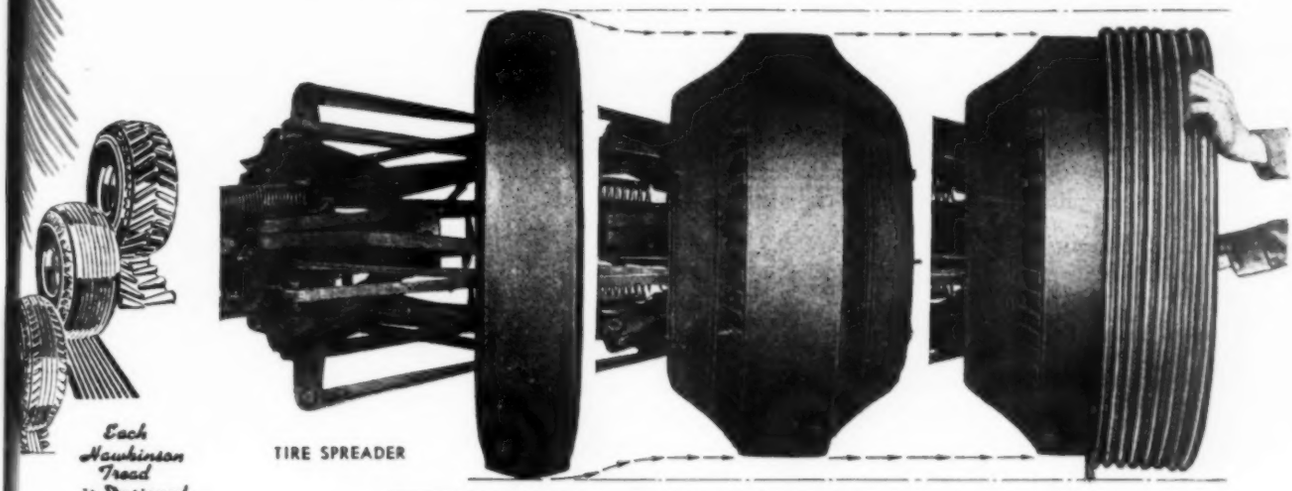
HAWKINSON TREAD

More than a Recap!

★ **AN IMPORTANT FEATURE—**

TIRE IS CONTRACTED TO FIT THE "ROLLING RADIUS" CURING RING

TIRE (with New Tread Rubber) Placed on Tire Spreader (*Before Spreading*)	**SAME TIRE** Beads Spread Radius **CONTRACTED**	*Hawkinson* **ROLLING RADIUS CURING RING** Applied to Radially **CONTRACTED** Tire

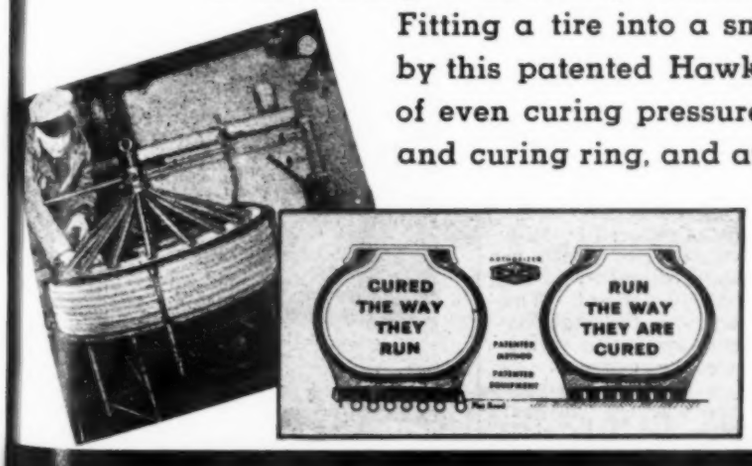


TIRE SPREADER

PATENTED METHOD PATENTED EQUIPMENT "ROLLING RADIUS" CURING RING

Each Hawkinson Tread is Designed to do its Particular Work

By evenly spreading the beads of a tire casing, the treaded surface of the casing is uniformly contracted to its "Loaded Rolling Radius". Fitting a tire into a smaller diameter curing ring or mold by this patented Hawkinson Method insures the obtaining of even curing pressure between all parts of the new tread and curing ring, and avoids any possibility of buckling the casing. We claim this is the only method of evenly contracting a tire to its" Loaded Rolling Radius".



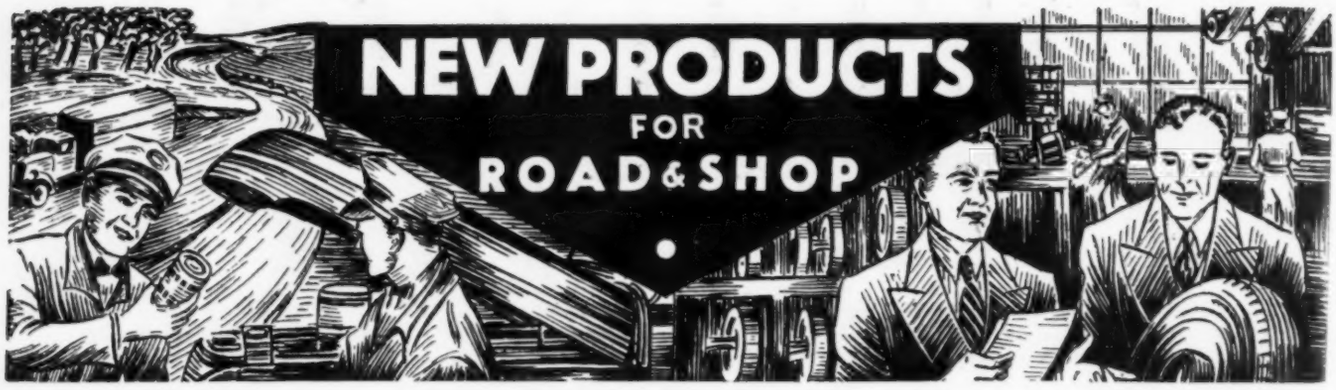
AUTHORIZED HAWKINSON TIRE TREAD SERVICE

Buy More Bonds

Authorized **HAWKINSON TREAD** *Service*

In Principal Cities U. S. A., Canada and Foreign Countries

Minneapolis ★ **PAUL E. HAWKINSON CO.** ★ Minnesota



Absorbs Grease from Floors

OIL and grease can be cleaned from your floors quite easily, with *"Sol-Speedi-Dri"*, a new powder-like compound offered by Refiners Lubricating Company.

This substance is simply spread around the floor and swept up with a broom, as shown. It is said to instantly absorb oil and grease—just as a blotter soaks up ink. It is also claimed to make floors skid-proof, oil-free, grease-free and fire-retardant.

The makers also suggest that you toss your oily and greasy wrenches and other tools into a box of this powder—and when you want them again, they'll be free from oil.

Other uses include the reclaiming of oil-soaked belting, ropes, shoes, clothing and the removal of oil film from metals to be painted.

This product is distributed by Refiners Lubricating Company, 601 W. 26th St., New York 1, N. Y., and Waverly Petroleum Products Co., Philadelphia 6, Pa.

•

Tire Repair-Retread Manual

A NEW 40-page booklet on treading and repairing tires and tubes, especially valuable now since synthetic tires and tubes are coming into wide use, has been published by The B. F. Goodrich Company, Akron, Ohio, and is available upon request. The booklet provides a thorough discussion of the fundamentals of modern tire treading and repairing, and is well illustrated.

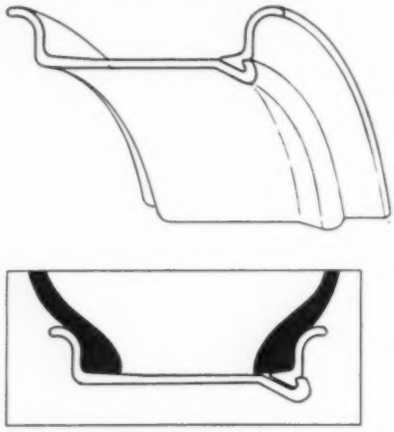
Treading definitions and terms are shown in a drawing of a tire's cross section and these are then given detailed textual description. Shop tools required for treading operations are listed, and the various steps in preparing the tire for the new tread, applying and vulcanizing it, are then given. Similar treatment is given the subject of repairing tires and tubes, as well as valve repair and replacement.

Of particular interest are curing charts for all types of treading and repairing, giving detailed schedules for various type molds.

•

New Rims Permit Wide-Base Use

GOODYEAR Tire & Rubber Co. recently announced the development of a new, wide-base rim, combining the features of the present standard rim base with an ingenious, new side-ring that increases rim width.



The rubber industry recently determined that the width of the rim should be approximately 70 percent of the sectional diameter of the tire, if maximum performance is to be obtained. Lesser rim width "pinches" the tire and causes excessive flex in the sidewalls.

Tires mounted on the wide rims do not generate as much heat in the shoulder of the tire as do tires mounted on narrow rims and the average amount of deflection under load and in motion is reduced by 12½ percent when ratio of rim width to that of tire sectional diameter is increased from 60 to 70 percent. The wider rim also adds to the stability of the tire, reducing sway and giving a more positive steering response.

As shown in a typical example illustration, the new width is obtained through use of the new type side-ring which generally adds a half inch or more to the rim width. An additional feature of the new type rim is the tapered "seat" under both beads. This centers the beads and decreases chafing and bead failure.

Present users of Goodyear rims can obtain an increase in their rim base width merely by obtaining new side-rings, as the old and new side-rings are completely interchangeable. To get full 70 percent rim width ratio, new bases and rings are available.

Tests have proved that use of a wider rim will increase tire mileage and preserve the carcass of the tire for a greater number of retreads. Two separate bus operations showed increases in milage of 15 and 18 percent through use of the wide-base rim, while an overland hauling company which recapped tires at 44,000 miles when using standard rims, increased this to 68,000 miles through use of the wide-base rim.

•

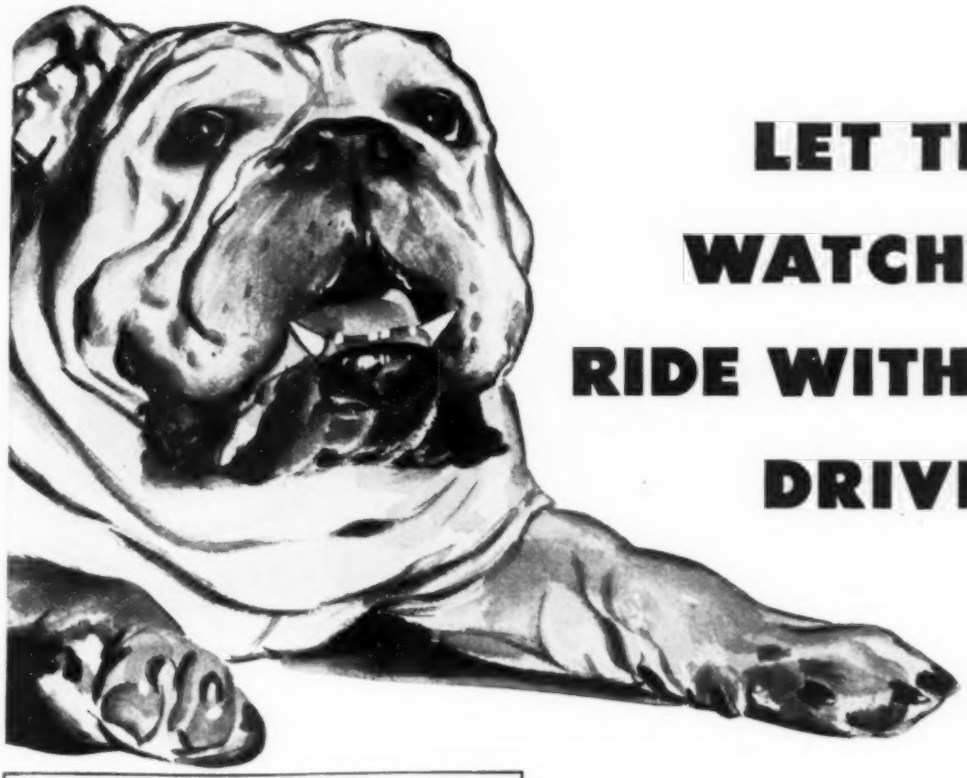
Handbook on Rotary Files

THE Rotary File Company offers a new handbook featuring its full line of standard shapes in hand-cut rotary files, together with a number of special designs.

The handbook explains the uses of rotary files for "clean-up" operations, where accuracy and finish are required. Files of this kind are used for smoothing up "cold-welding" jobs, as pointed out in ODT Vehicle Maintenance Section's booklet on this subject. This is a typical automotive application.

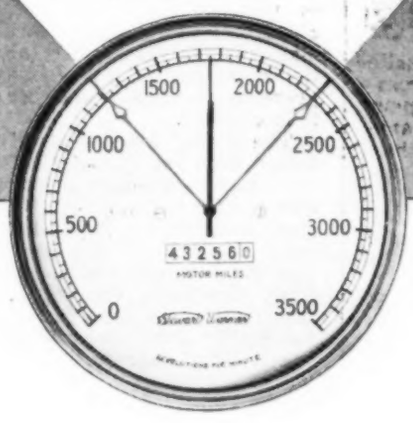
All variations of tooth-cuts are shown in the new handbook, together with a wide variety of sizes and shapes. . . . Free copies may be obtained from The Rotary File Company, Stratford, Conn.

"By Guess and By Golly Driving" COSTS DOUGH!



LET THIS WATCHDOG RIDE WITH EVERY DRIVER

Give drivers the Visible Check that keeps them in the "ECONOMY RANGE" —assures longer life for your engines



Truck and bus operators save up to 25% on maintenance, fuel and oil with Stewart-Warner Motor-Mile Tachometer

• Instinct can't tell a driver what engine speed will mean the most gas mileage and the least wear on your precious vehicles. Yet driving within the "Economy range" can cut fuel, oil and upkeep costs up to 25%. That's why so many fleet and bus line operators are installing Stewart-Warner Motor-Mile Tachometers as watchdogs in every cab.

Here's how it works: the "Economy Range" is indicated by two stationary pointers. All the driver has to do is keep the engine speed between these two limits. This prevents excessive engine wear—gives you more motor-miles of service at less maintenance cost!

These equipment-saving instruments can be installed in reasonable time. Prices range from $25 to $35. Stewart-Warner Motor-Mile Tachometers are sold on priority (you can get them if your work is related to the war) by the Stewart-Warner jobber near you. Write for his name—there's no obligation. Clip and mail the coupon today.

STEWART-WARNER
MOTOR-MILE TACHOMETER
CHICAGO, ILLINOIS

Another Product of STEWART WARNER

STEWART-WARNER CORPORATION
1831 Diversey Parkway, Chicago 14, Illinois
Please send complete information on Stewart-Warner Motor-Mile Tachometer.

Name _____

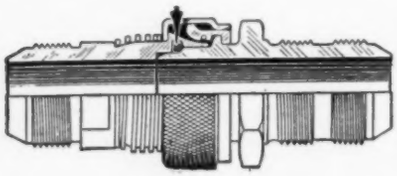
Address _____

City _____ *State* _____

Wiggins Quick Coupling

HERE is a new "quick" coupling developed for use on fuel, oil, instrument and air lines, for which many automotive applications have been found.

The coupling is disconnected by



simply pulling back the knurled ring. Connection is made by pushing the two ends of the coupling together and sliding the ring forward. A 4-way seal of synthetic rubber is featured, which can be used with a standard "O" ring or square gasket. The seal is completely out of the line of flow. (See arrow in sketch.)

The new design is available in sizes from ¼ to 1¼ inches for tubing or pipe and from ¼ to 2 inches for hose connections. . . . Details may be obtained from E. B. Wiggins Oil Tool Co., Inc., 3424 E. Olympic Blvd., Los Angeles 23, Calif.

•

New Engine Bearing Manual

CLAWSON & BALS, Inc., has announced a new Engine Bearing Manual. It is published primarily for the mechanics who actually service engine bearings but is also of interest and value to all who are in any way concerned with automotive engine maintenance.

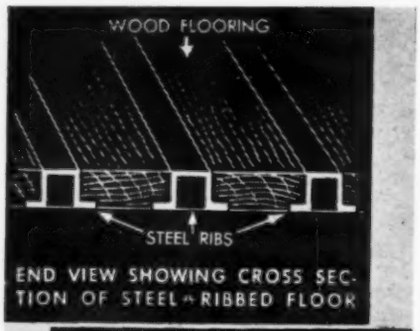
Ninety-six pages in length, it contains the needed information to assure correct selection and installation of bearings. It is profusely illustrated. A unique feature of the manual is the inclusion of tables showing crankshaft and bearing dimensions, tolerances, and oil clearances for all makes of cars, trucks, buses and tractors.

A copy may be obtained free by writing Clawson & Bals, Inc., 4701 West Lake St., Chicago 44, Ill.

Steel-Ribbed Floor in Trailers

AWARTIME engineering development of interest to all trailer users is a new and patented steel-ribbed floor announced by the Fruehauf Trailer Company of Detroit. The new floor is said to be capable of withstanding a concentrated load of 1,000 pounds per square foot—some 2½ times more than a conventional all-wood floor of the same thickness.

The steel-ribbed design is a radical departure from the usual "tongue-and-groove" type. Hardwood floor boards are bolted down between ten flanged steel ribs, running substantially the full length of the trailer. The flanges of the ribs support the floor boards, and the steel joints are flush with the top of the floor, forming a smooth, long-wearing surface.



The ribs, which are of high-tensile steel, are welded to all chassis cross-members and form an integral part of Fruehauf's airplane-type frame construction. Being stronger than any individual board, the steel ribs not only strengthen the floor but give added strength and rigidity to the chassis by serving as transverse braces to the cross-members, it is said.

With the new construction, expansion or contraction of boards is said not to open up cracks in the floor, since each floor board is backed up by metal throughout its entire length. And that this weather-stripping reinforcement also eliminates the "buckling" which frequently develops in conventional floors.

Besides increased strength and rigidity, the servicing problem is simplified. Any single board can be replaced without disturbing the rest of the floor since there are no "tongues" or "grooves" to worry about, and matched lumber is not required.

Fruehauf officials call attention to the fact that this feature might logically be held for postwar trailers, but that the new floor is being immediately incorporated in current production of civilian trailers.

•

New Bucket-Type Lubricator

TO HELP in the conservation of machinery, the Gray Company, Inc., has announced a new bucket pump called the "Block Buster" for lubricating trucks, contractor's equipment, industrial and farm machinery. It will handle all heavy-duty lubricating jobs and has several mechanical features designed to withstand hard "on-the-job" servicing.

A few of the important features include an easy-operating, double-acting pump developing 4,000 lb. pressure; hardened steel, precision-ground piston; simple, positive foot-valve; 18-gauge seam-welded container with ingenious pump support bracket which keeps the pump from being completely removed when filling; and a strong carrying handle which acts on a large stud-bolt to hold the cover and pump in position on the container. The conical-shaped hopper bottom automatically feeds all the lubricant in the container to the foot-valve and prevents channeling and loss of prime, it is claimed.

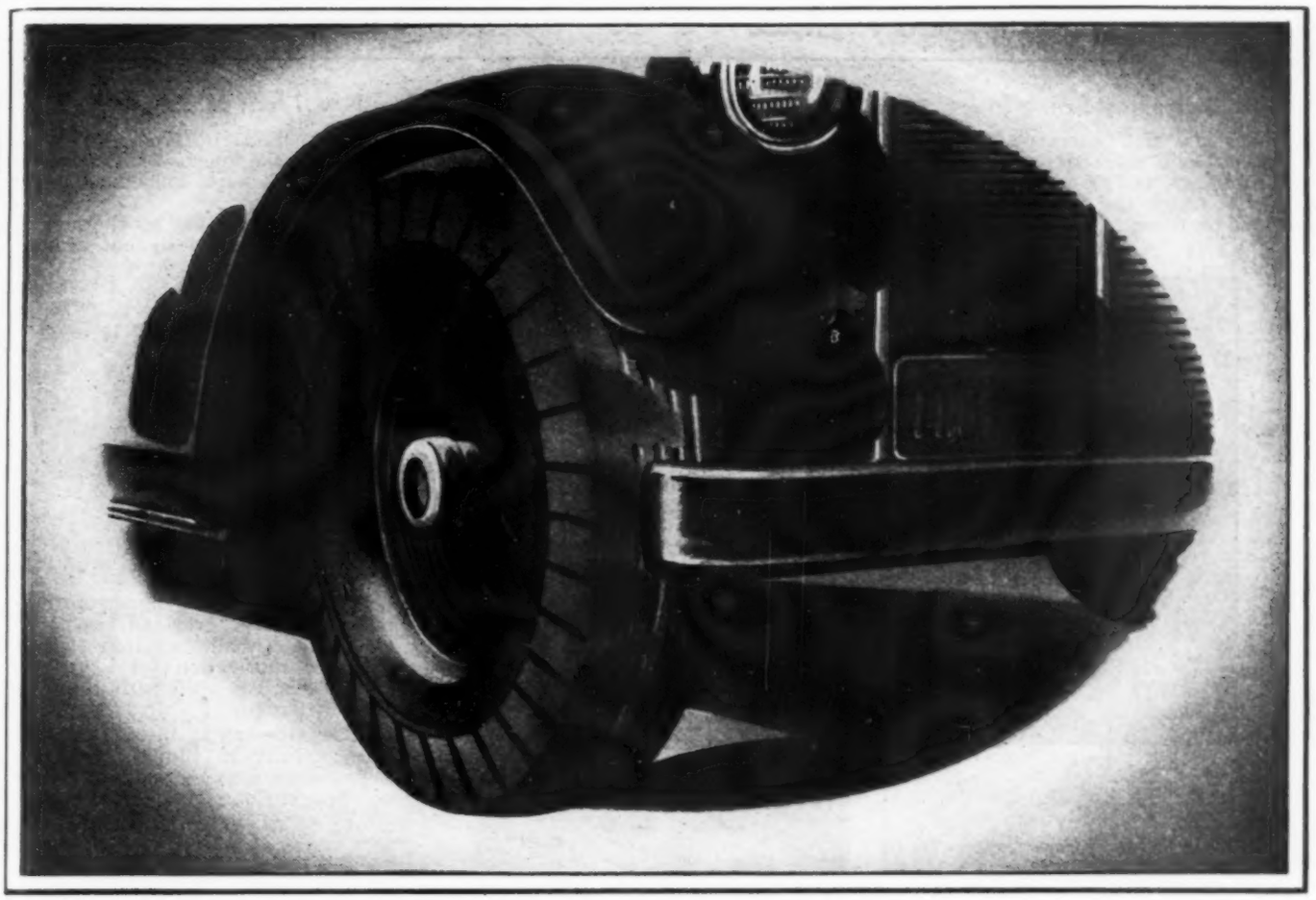
The Graco "Block Buster" can be obtained with 5½ ft. or 10½ ft. hydraulic adapter-equipped hose assembly, giant button-head coupler-equipped hose assembly, or standard button-head coupler-equipped hose assembly. For further information write to the Gray Company, Inc., 60—11th Avenue, N. E., Minneapolis, Minn. Folder BB-644P, describing this unit, is available on request.

•

Offers Handy "Want List"

L. J. MILEY Company, Inc., manufacturers of brake materials, have recently issued a handy, ruled "Want List" which may be obtained from their jobbers on request, without obligation.

Always useful in fleet service shops, these want lists are furnished in pads of 25, attractively printed in two colors, and fully ruled for ease in making notes.



Remember when . . .

—nobody worried too much about "cupped" tires?

"Cupping" has *always* meant rubber waste. (Even misalignment as little as ½ inch grinds as much rubber off truck tires as dragging them sideways 87 feet in every mile.)

Before the war—that kind of waste didn't threaten the nation's transportation system. Today it *does.* Today it's not only good business but good citizenship to

CHECK ALIGNMENT
EVERY 1000 MILES—and *keep rolling*
at VICTORY SPEED!

INSIDE FACTS ABOUT RUBBER

Truck tires for civilian use are *scarcer than ever.* Continuing high military needs have taken practically all of the rubber industry's expanding truck tire production. Even many essential trucks are going out of service for lack of tires. *Make your tires last by giving them the extra care they must have.* If you do get *new* truck tires, remember that synthetic rubber is a *new* material that will not withstand high speeds, excessive loads and improper inflation as well as natural rubber. Check loads and inflation *daily.*

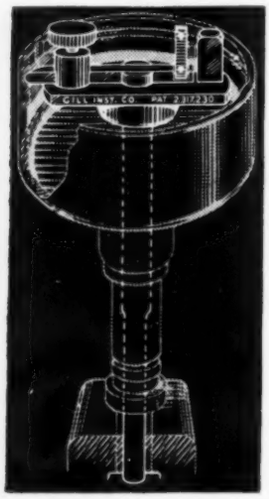
SEIBERLING

Heat-Vented TRUCK TIRES

Built by *Experts in Rubber*

Distributor Regrooving Tool

SATISFACTORY elimination of "skips" and correction of vacuum spark advance in the many cars and trucks in which the distributor-plate operates on three ¼" steel balls moving in a groove in the distributor housing, is now said to be an easy 5-to-10-minute operation, using the tool shown here.



This regrooving tool has recently been developed by Gill Instrument Co. of Philadelphia, Pa. for regrooving the worn or pitted ball race to a perfect radius for the original ¼" dia. balls, thus renewing the correct cam-angle in this type of distributor as used by Buick, Olds, Pontiac, Cadillac, LaSalle, Packard and G. M. C. trucks.

With the distributor shaft removed and tool locked in a vise, any eccentricity of the groove with the shaft bushing, due to wear, seasoning or incorrect original machining, can be entirely corrected in a matter of minutes.

The cutter-blade is fed into contact with the groove a thousandth at a time by a feed-screw, and is not dependent upon hand tension for the accuracy of cutter contact with the wall of the groove. This insures accurate regrooving, concentric with the shaft bushing on every job, according to the makers.

•

Brake Booster for Light Trucks

EMPIRE Brake Company, Newark, N. J., announces a new Model 50 Vacdraulic Power Brake Booster for passenger-cars and light trucks.

A complete, illustrated description of the heavy-duty Vacdraulic appears in the current issue. The new Model 50 has all of the mechanical characteristics of the heavy-duty model, yet it is small enough in size so that it may be installed at any convenient point in the hydraulic brake system of light trucks and passenger-cars.

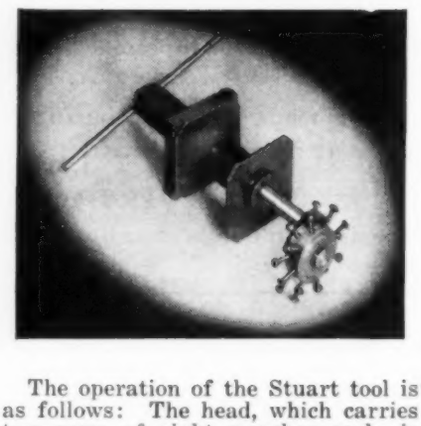
The new booster is vacuum-powered and reduces foot pressure over 50 percent. With it the brake operation develops over 1,000 lbs. of brake pressure. For more details address Empire Brake Company, South 14th St., Newark 7, N. J.

•

Diesel Carbon-Removing Tool

REMOVING the carbon from the air-intake ports of the GM 2-Cycle Diesel engine is said to be a matter of minutes with the new Stuart Carbon-Removal Tool shown here. A better, cleaner job is promised and in the case of the 6-cylinder engine, at least three and one-half hours are saved over the time required by previous methods used, according to the makers.

The ports can be cleaned with the Stuart tool without removing the pistons or pulling the cylinder-sleeves, bringing about an additional saving in time over other methods.



The operation of the Stuart tool is as follows: The head, which carries two rows of eight punches each, is mounted to a shaft by an eccentric cam and is designed so that when it is lowered into position the punches are automatically aligned with the ports to be cleaned. Only four turns of the handle are required to punch the carbon out of all 64 ports in each sleeve—a matter of minutes for all cylinders. The special alloy punches are individually mounted in the head so that replacement is easy and economical.

Complete details and prices may be had by writing the manufacturer—Stuart Engineering Division, 3349 North Ashland Ave., Chicago 13, Ill.

New 7-Inch Bench Grinder

BALDOR Electric Company announces the new 7-inch bench grinder shown here, known as their 7100 Series.

Features pointed out by the maker include: Specially-designed motor

which is cool-running under normal load, with 100% overload capacity; pre-lubricated ball bearings which require no lubrication for life; balanced wheels, equipped with patented balancing flanges.

This equipment is illustrated and described fully in Bulletin No. 318 which will be sent on request to Baldor Electric Company, 4351 Duncan Ave., St. Louis 10, Mo.

•

New Valve Lifter Set

NEW BRITAIN Machine Co. announces its "Little Handy" Valve Lifter Set, including the VL-151 valve lifter and the VL-139 split-lock replacer shown here.

The lifter will lift springs with a pressure of up to 300 lbs. It is 8½ inches long. The screw-controlled jaws expand to 2⅛ inches and remain set in any position. Jaws are adjustable to various spring sizes and expand parallel in a vertical plane, lifting spring squarely and allowing easy replacement of valve stem keys.

The split-lock replacer will handle all split-type valve keys on late motors, its sliding base preventing keys from dropping into the crankcase. It is said to work equally well on double-grooved valve stems and where the new convex locks are used. Although

VL-151 "LITTLE HANDY" VALVE LIFTER

VL-139 SPLIT LOCK REPLACER

it was designed for use with the valve lifter shown, it can be used with any valve lifter.

A preference rating of AA-5 or higher is required for the purchase of these tools, according to the makers, New Britain Machine Company, New Britain, Conn.

HERE'S UTMOST RELIABILITY IN SPEEDOMETER CABLES, TOO

No matter what makes of buses or trucks you operate, there are AC-engineered and AC-built Speedometer Cables for replacement service, either in complete cables ready for use, or in special kits with necessary parts and tools.

Twenty years of "know-how"—twenty years of experience in meeting the factory equipment requirements of automotive engineers—have given AC Speedometer Cables the *utmost reliability.* That's why more and more fleet owners insist upon AC Cables for all replacements.

Standardize on AC, the equipment that gives you *utmost reliability.*

AC SPEEDOMETER CABLES

AC CABLES assure THIS kind of QUALITY

★ Flexible cables made of highest grade steel wires on special, patented winding machines.

★ Flexible cables heat treated by patented methods to assure highest possible quality, which means:

Low whip
Low internal friction
Low torsional flexibility
High torque strength

★ Built to meet the exacting requirements of car and truck markets.

BUY WAR BONDS — BRING VICTORY QUICKER

In the Automotive World

Sloan Says New Cars to be Lighter

IT was recently declared by Alfred P. Sloan, Jr., Chairman of the Board of General Motors, that the post-war automobile will be lighter, more attractive and more economical. . . . Price, however, may turn upward, he stated. . . . "It will depend chiefly on labor and material price levels."

●

IHC Forms Foreign Operations Set-Up

THE International Harvester Company recently announced the formation of a new Foreign Operations organization, to take charge of all foreign activities of the company, except Canadian. . . . The new organization will be headed by G. C. Hoyt as vice-president. . . . C. N. King becomes director of foreign operations. . . . A. M. Rode is now director-general of European operations. . . . J. L. Camp will direct Latin-American operations. . . . All indications point toward a substantial foreign business for the company.

●

Roberts Heads Ford St. Louis Branch

FORD Motor Company announces the appointment of James P. Roberts as manager of its St. Louis (Mo.) branch. He was formerly assistant manager of Ford's Chicago branch. . . . Arthur S. Hatch, manager of the Chicago branch and the middle-Western sales region, presented Mr. Roberts to dealers in the St. Louis area. . . . He has been with Ford since 1921.

●

MEWA Plans Meeting Next February

THE Motor & Equipment Wholesalers Association has announced that it will hold its annual meeting on February 26-28th next at the Stevens Hotel in Chicago. . . . This will take the place of the annual convention previously scheduled for November 1944, but which was cancelled at the request of ODT.

●

ICC Urges Bus Heater Standards

THE Interstate Commerce Commission recently declared that an investigation discloses the need for prescribing standards of construction and performance of heaters and heating equipment in motor vehicles used for the transportation of passengers. . . . A proceeding was assigned for hearing before Examiner McHale at the offices of the ICC in Washington, on October 17th, 1944.

Marmon-Herrington "Flying Tanks" Active

U. S. ARMY tanks built by the Marmon-Herrington Company, Indianapolis, Ind., comprise a new military weapon that is seeing active service in the European theater of operations. . . . The tanks are specially-designed to be flown to the battle-field in large gliders. . . . The Germans were said to have been stunned in the initial stages of the invasion by the unloading of these tanks which helped to blast them out of their positions. . . . Waiting to open fire on the expected landing of troops from the big gliders, the Germans were shocked to see tanks come racing towards them.

●

IN recognition of Raybestos' continued excellence in war production, a star has been added to their Army-Navy "E" flag, which was originally awarded to Raybestos Division, Bridgeport, Conn., last October.

●

Greyhound Plans New Post-War Buses

NEW design and mechanical features were recently disclosed as the Greyhound Bus Lines let contracts for the construction of experimental models of its post-war "Compartment Super Coach." . . . It is expected that some new buses will be already on the road, for tests, early in 1945. . . . Two types will be built. . . . Consolidated-Vultee Aircraft will build models with air-cooled engines and many airplane-type construction features. . . . Others, to be built by General Motors, will be Diesel-powered and will follow methods of body construction typical of that organization. . . . Elsewhere in this issue you will find a picture of one of the new models.

●

Pharis Opens Service Store

A NEW Service Store has been opened by the Pharis Tire & Rubber Company, Newark, Ohio, for retail sales to Pharis employees only. . . . Sherman Byers is manager and J. W. Gibson assistant manager. . . . All Pharis products are sold directly to their employees through this new outlet.

Named Brooklyn Manager for White

J. E. BAIN, formerly national account representative of The White Motor Company in the Metropolitan region, New York, has been named manager of the Brooklyn branch, according to announcement by J. N. Bauman, vice-president in charge of sales. He succeeds E. J. Lynch who has been given an important sales assignment in New York City. . . . Mr. Bain has been with The White Motor Company for many years, and was Springfield (Mass.) branch manager before going to New York. . . . His knowledge and experience assures truck owners in the Brooklyn area of the best kind of service.

●

Nash Cars 90 Days After War's End?

WHEN the reconversion signal is given, Nash will immediately launch a car-building program aimed at tripling the company's pre-war production. . . . The company is already ordering supplies and organizing manufacturing schedules on that basis, according to Geo. W. Mason, president. . . . "Most car manufacturers will build their first cars within 90 days, plus," he said, "the plus being for potential delays such as lack of a machine or two, or some supply bottleneck."

●

Iowa Relaxes Rules for Emergency

THE State Highway Commission of Iowa recently authorized its safety and traffic department to issue emergency fuel-oil permits to transport haulers, permitting hauling of a capacity load of fuel-oil on a vehicle that is legally qualified to haul the same capacity load of gasoline. . . . Information required with application for fuel-oil permits is as follows: (a) name of owner of unit; (b) 1942 plate number of tractor; (c) 1944 plate number of semi-trailer; (d) capacity gallonage of tank by compartments; (e) weights of axles when loaded with capacity load of gasoline; (f) number and size of tires for each axle.

●

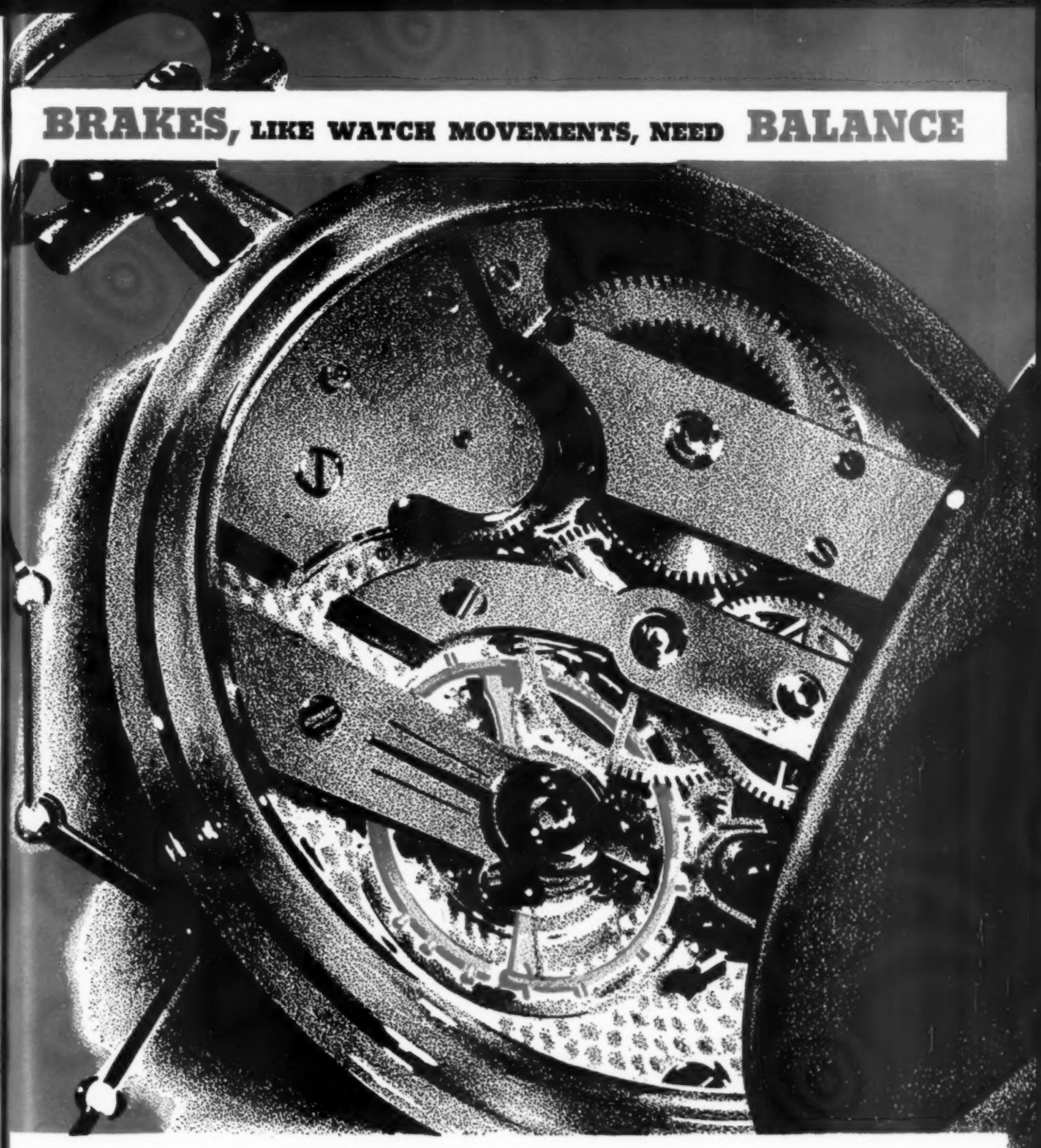
Bendix to Enter Home Radio Field

THE Bendix Radio Division of Bendix Aviation Corporation, plans to manufacture and market a line of home radio sets, just as soon as the military situation permits, it was recently announced at South Bend headquarters. . . . Home radios will be manufactured in the company's plants in Baltimore, Md. . . . Bendix is said to be one of the world's largest producers of precision radio, radar and other communications equipment for aircraft and military uses.

●

Welding Society Meets This Month

THE American Welding Society will hold its 25th Annual Meeting in Cleveland from October 16th to 19th. . . . The meeting is being held, as in past years, in conjunction with the National Metal Congress. . . . Seventeen technical sessions, embracing more than 60 papers on welding subjects, will be featured.



BRAKES, LIKE WATCH MOVEMENTS, NEED BALANCE

BALANCED BRAKES *HAVE WHAT-IT-TAKES*

A watch is as accurate as its balance-wheel, or governor, which regulates the whole movement. Automotive brakes, too, are as accurate as their balance . . . in materials, application, and brake-action. The time to get this triple balance is now, and the way is through Grey-Rock Materials and Grey-Rock Engineering Methods, embracing N. S. C. Standards.

See Your Grey-Rock Jobber

UNITED STATES ASBESTOS DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA.

Grey-Rock

BALANCED BRAKSETS · BLOCKS

CLUTCH FACINGS · FAN BELTS · HOSE

ESSENTIAL PRODUCTS FOR ESSENTIAL TRANSPORTATION

PLAN YOUR PLANT DRIVE NOW!

Good organization will be needed to sell the 6th. The task of raising the huge sum required will be the most difficult ever asked of Industry. As each new military success brings us closer to Victory, the public naturally will feel that the urgency of war financing is lessened—whereas it isn't. So organize now to prevent a letdown on the home-front from causing a letdown on the fighting front. Build your plant's payroll campaign around this fighting 8-Point Plan. You don't have to wait for the official Drive to start—swing into action NOW!

1 **BOND COMMITTEE**—Appoint a 6th War Loan Bond Committee from labor, management and each representative group of the firm.

2 **TEAM CAPTAINS**—Select a team captain, for each 10 workers, from men and women on the payroll—but not in a supervisory capacity. Returned veterans make most effective captains.

3 **QUOTA**—Set a quota for each department and each employee.

4 **MEETING OF CAPTAINS**—Give a powerful presentation of the importance of the work assigned to them. Instruct them in sales procedure. Have them carefully study the Treasury Booklet, *Getting the Order.*

5 **ASSIGNMENTS**—Assign responsibilities for:

(a) *Music, speeches and announcements of the opening rally.*

(b) *Pre-drive letter to employees from management and labor.*

(c) *Competitive progress boards.*

(d) *Meeting schedules, etc.*

6 **CARD FOR EACH WORKER**—Dignify each personal approach with a pledge, order, or authorization card made out in the name of each worker. Provide for a cash purchase or installment pledge. Instruct each captain to put a pencil notation on the card to indicate the subscription he expects to solicit from each worker.

7 **RESOLICITATION**—People don't mind being asked to buy more than once. Resolicit each employee toward the end of the drive in a fast mop-up campaign. Call upon your State Payroll Chairman; he's ready with a fully detailed plan—NOW!

8 **ADVERTISE THE DRIVE**—Use all possible space in the regular media you employ to tell the War Bond story.

This is an official U. S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council

WHEREVER the Going is Toughest—

J-M Brake Linings are smashing all records for dependability

IT'S SURE TOUGH GOING for our boys overseas—wading up beachheads . . . grinding over hedgerows . . . struggling through jungles . . . crawling over mountains. And right with them—making their speedy advance possible—are jeeps, "ducks," half-tracks, trucks, prime movers, and other kinds of U. S. Army vehicles . . . many of them equipped with Johns-Manville Brake Materials.

When J-M Brake Linings, Brake Blocks, and Clutch Facings were chosen for this vital job of war transport they were expected to stand hard going. They have come through with flying colors . . . in many cases even exceeded expectations.

Here at home, too, J-M Brake Blocks on the nation's overtaxed truck and bus fleets are setting new wartime performance standards.

Why not use these battle-proved friction materials on *your* fleet? A Johns-Manville representative will be glad to survey your fleet and make recommendations . . . without obligation to you. Write today to Johns-Manville at New York, Cleveland, Chicago, St. Louis or San Francisco.

* * *

If you have not yet received a copy of the J-M Fleet Reliner's Manual—the most complete "how-to" book of its kind—send for it today.

JOHNS MANVILLE PRODUCTS

Johns-Manville BRAKE LININGS

FLEET-TESTED SETS BRAKE BLOCKS CLUTCH FACINGS

DU PONT RECOMMENDS

259-LINE DUCO

REG. U. S. PAT. OFF.

for trucks and buses

TODAY

YOUR OLD FAVORITE, DULUX, will be back as soon as possible. At present *phthalic anhydride,* an essential DULUX ingredient, is needed as a constituent of smokeless powder and for use in the manufacture of an insect repellent to protect our fighting men against disease. As a result, government order limits paint manufacturers to only a small quantity of phthalic anhydride, for the preparation of finishes for a few rigidly specified uses.

Until DULUX is again available, we recommend that you use 259-Line DUCO as the finish to protect irreplaceable automotive equipment. This fast-drying lacquer is easy to apply, dries to a high initial gloss, and requires no rubbing. 259-Line DUCO may be new to you, but it is not a wartime development. For years it has been the choice of American railroads for painting coaches, and its wearing qualities have been proved under severest climatic conditions. Use 259-Line DUCO now—plan on post-war DULUX tomorrow.

E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Refinish Sales, Wilmington 98, Delaware.

BUY BONDS—BUY MORE THAN BEFORE!

DU PONT REFINISHING MATERIALS

Better Things for Better Living
. . . through Chemistry

DU PONT

REG. U.S. PAT. OFF.

Senate Passes Post-War Highway Bill

THE United States Senate on September 15, passed and sent to the House of Representatives an amended version of its post-war highway bill (S. 2105) which would:

1. Authorize $450 million of Federal Funds annually for each of the first three years following the war with $200 million yearly for regular Federal-aid roads; $125 million annually for urban highways and $125 million annually for farm-to-market roads.

2. Require matching of 50 percent Federal funds and 50 percent state funds.

3. Allocate funds for regular Federal-aid roads on the historical formula of 1/3 area, 1/3 post road mileage and 1/3 population; allocate urban funds in the ratio which the population of municipalities of 5,000 or more in any state bears to the total urban population of the Nation; allocate funds for farm-to-market roads on the basis of 1/3 area, 1/3 post road mileage and 1/3 rural population.

4. Eliminate proposals for use of Federal funds in purchasing land for rights-of-way.

5. Provide that at least 10 percent of all Federal road funds shall be used unmatched for elimination of rail-highway grade crossing hazards, with railroads paying 15 percent of the cost.

6. Provide a three-year total of $140,250,000 for National forest and park roads and trails, not to be matched.

7. Provide that states not diverting highway funds shall receive Federal funds even if unable to match them.

In the House of Representatives the measure will meet the House committee-approved H.R. 4915 which proposes $500 million annually in Federal-aid road funds for each of the first three post-war years.

●

Post-War Gas Use Expected Down 25 Percent

GASOLINE consumption by motor vehicles in the immediate post-war period is expected to be at least 75 per cent of recent pre-war requirements, largely due to the decrease in the number of serviceable cars which will be available to consumers, according to a survey by Alberta H. Adams and B. H. Weil, for a petroleum research and development company reported in *Chemical and Engineering News,* published by the American Chemical Society. . . . In the second phase of the post-war period demand is expected to reach a new high, however.

The report states: "Consensus among automotive and petroleum experts indicates that some 20,000,000 of the nation's prewar total of nearly 30,000,000 cars will remain in operating condition at the war's end, maintaining, with the help of some military consumption and increased commercial and farm use, a volumetric market for gasoline of at least 75% of the prewar level.

"A rapid recovery to or above normal prewar use is expected to follow as new tires and cars come into production. The immediate postwar cars will probably be the 1942 models, with changes in automobile design expected to come slowly. One hundred-octane automotive fuels are not expected to be required for some years, if ever."

The report views as "serious" the problem of getting new cars on the highway and indicates that it may be two years before sufficient units are supplied to replace cars lost to service during the war period.

BATTLE CRUISERS *of the highway*

They never fire a gun, but these fleets are in action against the enemy night and day. They are the battle cruisers of the highway —the truck and bus fleets of America!

Doing heavy duty service, under severe operating conditions, they need a "special" heavy duty oil. Wolf's Head has developed this special Heavy Duty Oil with the five necessary characteristics: strong, tough film—resistant to oxidation—non-corrosive—amply detergent—and fortified to withstand high engine temperatures. Many lubricating oils have one or more of these characteristics, but Wolf's Head Heavy Duty Oil excels in the expert blending of all five. It is the product of sixty years of refining experience.

This experience has made Wolf's Head the preferred choice in many fields of lubrication. Leading aircraft engine manufacturers use Wolf's Head Aviation Oil for their critical break-in runs. Fleet operators—who choose oil by value alone—insist on Wolf's Head Motor Oil. And for heavy duty service, Wolf's Head Heavy Duty Oil is the choice to save engine wear and cut operating costs. Proof of Wolf's Head Heavy Duty performance is contained in our free booklet, "Heavy Duty Maintenance." Write for your copy to Wolf's Head Oil Refining Co., Inc., Oil City, Pa., or New York 10, N. Y.

WOLF'S HEAD LABORATORY CONTROL SERVICE

Gives fleet operators specific recommendations for their units, based on analysis of crankcase oil. Helps to establish correct drain periods, conserve engine life, reduce lay-ups and frequently reveals unsuspected engine trouble. Free and without obligation.

WOLF'S HEAD

MOTOR OIL AND LUBES

100% Pennsylvania P.G.C.O.A. Permit No. 6

LOOSITE: to clean the engine

SILOO: to keep it clean

To avoid expensive lay-ups and repairs caused by sludge and gum formations, use Loosite to clean the engine thoroughly, and Siloo to keep it clean.

Treatment with these safe, swift-acting solvents insure long operation at peak efficiency and prolong gasoline and diesel engine life. Bearing failures, frequently the result of acid contamination are also eliminated by the use of Siloo and Loosite, both of which contain acid neutralizers and inhibitors.

If you have any petroleum residue problem in engine, diesel or fuel tank, write for data engineered to your needs.

Petroleum Solvents Corp.

Solvents for all types of petroleum residues

NEW YORK • CHICAGO • SAN FRANCISCO • DALLAS

GENERAL OFFICES: 331 MADISON AVE. • NEW YORK 17, N. Y.

Auto Reconversion Plans Take Shape

AN AGGRESSIVE pursuit of reconversion plans is reported in progress by plant engineering and production planning departments of former passenger-automobile factories now engaged in war material manufacturing.

In some cases equipment is being moved both to promote war production efficiency and to accommodate future passenger-car manufacturing operations. Several manufacturers are overhauling large presses and drills and other machinery now stored in improvised shelters.

When the "go" signal is given following the capitulation of Germany, huge supplies of stored dies, jigs, fixtures and other war-disarranged machinery will be moved into car-producing positions as rapidly as government-owned property can be cleared out by the private plants. It is expected that one major problem will be obtaining new equipment to replace units loaned or lost in the war effort.

Even those passenger-car plants which will continue in war production until Japan is defeated are expected to evolve means of overcoming handicaps in the resumption of normal peace-time manufacturing. Three-and-one-half months lag time has been estimated by some authorities for the entire industry to get back into automobile production, after the date of official authorization.

●

Virginia Prepares Post-War Highway Analysis

AN ANALYSIS of Virginia's highway system, its present status, immediate and future needs, financial structure and the effect of the war, are vividly pictured in *"A Graphic Presentation of Highway Facts Including the Effects of War"*, issued by the Virginia Department of Highways.

Subjects illustrated by charts and graphs include: Trends in Source of Highway Revenues; Source of the Highway Dollar; Effect of War on Primary Road Travel; Trends in Highway Expenditures; Where the Highway Dollar Goes; Development of the Primary System; Present Needs for Rebuilding, Relocating and Widening Primary Roads; The Cost of Present Needs; and, Development of the Secondary Highway System.

Graphic treatment also is given to the effects of the war on the various systems and types of road in the state as well as income and financial structure.

The facts presented in the booklet are serving as the basis for Virginia's post-war highway plans.

●

New Plan to Extend Use of School Buses

AN EXPERIMENT in education being conducted in Nebraska may forecast even greater use of motor transportation by public schools than in the past.

Municipal schools are contracting with rural school boards to educate rural children, the municipality providing teachers, school facilities and transportation. Under the arrangement, the rural areas depend entirely upon small urban centers for the education of farm youth and escape large investments in school plants. One or two rural school buildings have been moved intact to town or village.

Financial arrangements vary. At Wilcox, Nebraska, the rural districts are charged $60.00 each for elementary school pupils. At Minden high school, where 78 of 210 pupils are from the county, the city charges

$108 per pupil. This sum is paid by the county, parents bearing the transportation costs of about $2.50 per month.

Advantages for this unique program are higher caliber of instruction, lower education costs and less hardship on the country boy and girl through the use of bus transportation. Proponents of the plan expect more rural children will continue into high school grades.

●

SAE Discusses Land and Air Transport

POST-WAR transportation involving operation of both air and land buses, air and land cargo carriers, was the subject of discussion at the SAE National West Coast Transportation & Maintenance Meeting, held in Portland, Ore., recently.

The program called for consideration of "Surface Buses of the Future," with discussion led by W. W. Churchill, of Washington Motor Coach, Seattle, Wash., and of "Post-War Expectations and Possibilities of Air-Borne (Helicopter) Buses," with Agnew E. Larsen, of Rota Wings, Inc., New York, N. Y., as discussion leader.

One entire session was devoted to air cargo, with emphasis put on the cooperation and coordinating of ground and air transportation of merchandise. Discussion leader was Raymond D. Kelly, of United Air Lines Transport Corp., Chicago, Ill.

These post-war subjects were among highlights of the meeting, one of a series of wartime engineering conferences being held this year under the auspices of the Society of Automotive Engineers. The balance of the program was related directly to wartime operation and maintenance of land transport vehicles. Engineering subjects included preventive maintenance, fuel problems, lubrication and filtration, war use of Diesel engines, and possibilities for further development of gasoline engines.

The meeting was sponsored by SAE Transportation & Maintenance Engineering Activity, with the SAE Southern California, Northern California, Northwest, and Oregon Sections, and the SAE Spokane Group, cooperating.

●

Tolls on Federal-Aid Roads Held Illegal

THE Public Roads Administration has advised New York State authorities that it considers unlawful a proposal to levy tolls on Westchester County Parkway, which was constructed with the assistance of Federal funds.

R. E. Boykin, Solicitor, PRA, said in a letter on the subject that the Federal Government had spent $1,211,401 on the Saw Mill River Parkway, $1,150,-101 on the Hutchinson River Parkway and smaller sums on other parkways, all between 1933 and 1936.

Mr. Boykin also wrote: "In administering the provisions of the Federal-aid road legislation for more than a quarter of a century, the Public Roads Administration has at all times endeavored to see that full effect was given to the inhibition against tolls on the highways constructed with funds appropriated by the Congress to aid the States in road construction work.

"In the interpretation and application of this law, our position has been that any toll gate erected at any point on a highway on which Federal funds were expended which would make it necessary for traffic to pay the toll, in order to avail itself of the use of the section of such road actually improved with Federal funds, would constitute a violation of the law."

Preventive maintenance

begins on a GLOBE HOIST

Today—more so than ever before—your fleet of vehicles must be kept fit.

More revenue miles—more service is expected, regardless of age of vehicle.

More frequent inspection—unit overhaul is required to preserve your critical wearing parts.

The biggest percentage of such work calls for access to the underside of the vehicle.

Manpower is scarce—so employ the GLOBE Universal Truck Hoist to save time—and enjoy accessibility quickly and with safety.

GLOBE HOIST COMPANY
Des Moines 6, Iowa
Philadelphia 18, Penna.

Used as a Front End Lift

Single post used for short-wheelbase Trucks or Automobiles

Globe Universal Truck Hoists—Wheel Dolly and Portable Pit Lifts—are available on W.P.B. limitation order L-270 to essential fleet operators.

GLOBE Universal TRUCK HOIST
HANDLES ALL WEIGHTS AND WHEELBASES

Illustration courtesy American Coach & Body Company

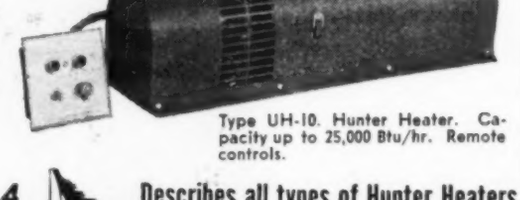
AUXILIARY HEAT

for Personnel or Perishable Goods Carriers

Type UH-5 Hunter Heater. Capacity 15,000 Btu/hr. Portable or installable.

Hunter Gasoline Fired Heaters are designed to do a specific job of motor transport heating efficiently and safely. There is no exposed flame . . . combustion exhaust is outside of the vehicle . . . they operate independently of the engine . . . heat volume is controlled from a conveniently located panel. . . . They burn any type of gasoline, and burn it economically in proportion to the heat delivered.

For utility trucks with crew compartments, employee vans, buses, truck or trailers loading foods or other supplies damageable by cold (and this includes tanks of freezable liquids) they fill a need for which there has heretofore been no satisfactory solution. If you face one of these heating problems, check with Hunter engineers NOW.



Type UH-10. Hunter Heater. Capacity up to 25,000 Btu/hr. Remote controls.

BULLETIN HG-4 Describes all types of Hunter Heaters

HUNTER AND COMPANY

Transport Equipment

CLEVELAND • OHIO

1544 EAST SEVENTEENTH STREET

How to Adapt a P.M. Plan

(*Continued from page* 70)

forth at the Boston Navy Yard to protect the Navy's automotive equipment. Our P.M. program has been carefully thought out; it is working successfully. We hope that other operators of civilian fleets will get some good out of it. That is the purpose of submitting it to your Editor, as we have, in turn, obtained much benefit out of reading the experiences of other fleet operators in this good publication.

•

"Time the Spark"

(*Continued from page* 88)

relative comparison against which to judge the overall adjustment of an engine. Spark timing should always be on a basis of a certain retardation *from maximum vacuum*, and *not to* a vacuum reading. Timing to a vacuum reading might give incorrect spark settings for partially worn engines, whereas the retardation from maximum vacuum with steady running engine compensates for normal wear and provides a simple method of obtaining optimum spark timing.

The maximum vacuum at 1500 r.p.m., no load, also provides a quick check on engine condition and operation, since the maximum vacuum at 1500 r.p.m. should be very close to the maximum vacuum at idle speed. If the maximum vacuum at 1500 r.p.m. is more than .5" mercury below maximum vacuum at idle speed, it indicates other defects which can be diagnosed by conventional, unrestricted, vacuum gauge techniques which have been described by others.

By following the routine of first obtaining the vacuum readings at idle speed, followed by the maximum vacuum reading at 1500 r.p.m. and then retarding the distributor to produce the standard reduction of vacuum, the best check and cross-check on timing and mechanism at both idle and full advance is obtained.

The advantage in this method of timing ignition lies in the fact that the effects of any wear in the drive mechanism or irregularity of advance are reduced by operating the engine at the higher speed. If the drive mechanism and/or the advance mechanism are in bad order, the resulting idle operation of the engine may appear very poor; but it is obviously more desirable to have correct timing at road operating speeds than at idle speeds; and in cases of partially worn timing mechanisms, both cannot be obtained.

Vacuum Advance Mechanism: On some timers which have vacuum advance mechanism, it is frequently found that this vacuum advance may operate during the period when the engine is being accelerated; and this premature advance may cause several severe detonations before the vacuum advance again retards in response to the actual manifold conditions. The

reason for this peculiar operation lies in the design of the mechanism and the position at which the tube leading to the vacuum advance cylinder is brought into the carburetor venturi. The end of this tube is just above the closed position of the throttle. As a result, the vacuum impressed upon this tube is a combination of the actual vacuum in the manifold plus a vacuum caused by a high speed flow of air between the throttle and the opening to the vacuum cylinder tube.

During an acceleration under load with the throttle being slowly opened, the vacuum which is produced momentarily in the tube to the vacuum advance cylinder may be enough to produce a false advance of the vacuum mechanism which is immediately corrected when the throttle is moved in a more nearly wide-open position in which the effects of air stream past the vacuum control tube are no longer effective.

A way to correct this false advance is to increase the capacity of the tube leading from the carburetor to the vacuum advance cylinder. If there is more air in this vacuum advance system, it will take a longer time for the vacuum at the carburetor throttle valve to reduce the pressure sufficiently in the vacuum chamber to cause the vacuum advance to operate. By slowing this advance, the detonation during acceleration can be eliminated without affecting the vacuum advance operation for sustained partial-throttle operation when the vacuum advance should be in effect.

In general, the tube from the vacuum cylinder to the carburetor is 3/16" diameter copper tubing, made as short as possible for production reasons. Enlarging this line to ¼" or even 5/16" diameter and increasing its length by means of a loop will usually produce the desired lag and eliminate premature detonation during acceleration.

The concluding installment of this article will appear in the November issue. It will cover the subject of velocity governors and their relation to spark timing—a subject in itself. It will also outline ways and means of educating your drivers to keep engine speed at the proper point to minimize knocking engines, especially during the present emergency, when fuels have been lowered in octane rating.

•

30,000 TRUCKS AND CARS?

• The Treasury Procurement Department will shortly offer 30,000 Army trucks and cars, to be sold as surplus property throughout the nation, according to a recent rumor. . . . It was said that about 3,000 trucks, 400 cars and 3,500 motorcycles would be released for sale in the Southwest alone, through the Procurement Division Regional Headquarters at Ft. Worth, Texas. . . . Government sales are to dealers only.

TIRE CHAIN INFORMATION Worth Keeping- REGARDING

TIRE CHAIN Limitation Order L-201, revised July 10, 1943, and again amended in its entirety April 3, 1944, permits manufacturers this year to make only 48% of the total weight of 1941-1942 season tire chain sales in the following proportion:

24% in Assembled Passenger Car Chains, Cross Chains and Repair Parts
24% in Assembled Truck Chains, Truck Cross Chains and Repair Parts

Regular weight (not Extra Heavy) and Multi-grip Bar Reinforced Assembled Chains and Cross Chains can be made and shipped to Jobbers' and Dealers' stocks in the following sizes only:

Passenger Cars	Trucks (Single and Duals and Duals with Triple Side Chains)	
	6.00—16	
6:00—16 LCS	6.50—20/32x6	7.50—20/34x7
6.50—16	7.00—20	8.25—20
7.00—16	7.50—16	9.00—20
7.50—16	7.50—17	9.75—20

Sizes not listed above, as well as Extra Heavy Chains, may be made and shipped *direct to the user*. Metallic plating of Chains for rust protection is prohibited.

CHANGES—
AND WHAT THEY MEAN:

The only change in permissible sizes is the addition of 6.00-16 to the truck chain classification.

An increase of 8% over last year's total production (by weight) is permitted. *Warning*—do not interpret this to mean that chains will be more plentiful this year. The reverse may be true, due to depletion of stocks in inventory at the beginning of last season. The allowable new production will not begin to satisfy the demand. Urge everyone to make present chains last by frequent inspection, prompt repair and careful use.

REGULAR AND BAR-REINFORCED MULTI-GRIP TIRE CHAINS

THE McKAY COMPANY PITTSBURGH, PA.

WELDING ELECTRODES . . . COMMERCIAL CHAINS . . . TIRE CHAINS

McKAY TIRE CHAINS ARE DISTRIBUTED THROUGH JOBBERS

SPEED WASH
FOUNTAIN BRUSH

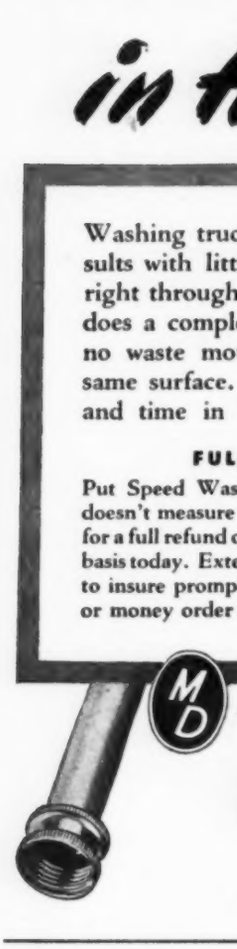
Cuts Washing Time in Half

Washing trucks and trailers with Speed Wash gets amazing results with little effort and great speed. Clean, fresh water feeds right through the handle and tufts, so that each 12 inch stroke does a complete job of soaking, scrubbing and rinsing. There's no waste motion changing tools and back-tracking over the same surface. You can see how this easily cuts washing work and time in half, does a better job, and also saves the finish.

FULLY GUARANTEED

Put Speed Wash to work on your trucks. If it doesn't measure up to your expectations, return it for a full refund of your money. Order on this liberal basis today. Extend your priority of AA-5 or better, to insure prompt shipment. Make out your check or money order to Milwaukee Dustless Brush Co.

9.45 post paid if check accompanies order.



"Dustless"—"Speed Sweep"—"Speed Wash"—brushes

Milwaukee Dustless
BRUSH COMPANY

524 NORTH 22nd STREET, MILWAUKEE 3, WISCONSIN

How to Test Anti-Freeze

(*Continued from page* 96)

ature of 387° F. at which point the ethylene glycol will begin to boil off. Considerably before the highest temperature is reached, however, the boiling solution will begin to give off white vapors which have a very distinctive odor and which will not be confused with either alcohol or petroleum odors.

Undiluted ethylene glycol, when rubbed between the fingers, feels slippery and oily. However, its odor is normally different from petroleum products. It can be distinguished from petroleum products by comparing its reaction under the following simple test, to the reaction of a known petroleum material, such as kerosene or other light, pale oil, under the same test:

Place five to ten drops of the liquid on a thin, flat piece of sheet steel, such as a can cover, and heat the steel under the liquid with a small flame, such as a match or candle flame, until the liquid boils or becomes very thin and flows away from the heated area.

If the liquid is undiluted ethylene glycol, it will not spread over the steel, and, if heated until the liquid begins to boil, it will give off white vapors having a distinct odor. The boiling liquid can then be ignited with a match and the ethylene glycol will burn with an almost colorless (blue) flame, without smoke.

If the liquid is a petroleum material, upon heating it will immediately begin to spread over the steel sheet and run away from the heated portion. The petroleum can hardly be made to boil on a flat piece of steel, and if it is ignited with a match it will burn with a yellow, smoky flame.

A further indication of ethylene glycol is, of course, its ability to easily dissolve into water, whereas the petroleum material will not so dissolve.

Test for Glycerine Mixtures: There is little likelihood that any glycerine will be available during the coming winter season for anti-freeze, even though it is a moderately effective material. The boiling point of pure glycerine is 554° F. and the boiling point of a 50 percent water solution is 225° F. Boiling a sample and noting the boiling point temperature will give one clue to this material. No salty residue should result from a complete boiling off. . . . Glycerine and alcohol mixtures, which were used considerably fifteen years ago, can be checked by a combination of the above tests.

Test for Plain Water: It is obvious that plain water would pass certain of the tests given above. Hence, every solution should be tested for anti-freeze characteristics with a conventional freezing point tester (hydrometer). A small sample of a diluted solution can be tested for actual freezing point in an ice cream or deep-freeze refrigerator. Make the sample according to the manufacturer's recommended proportions for the actual temperature in the refrigerator measured by a thermometer. The freezing point of an anti-freeze solution is defined as the point at which ice crystals *begin* to appear in a solution. The solid point of a solution is somewhat below the freezing point.

Tests and Cautions in Reuse of Old Anti-Freeze: If the anti-freeze solution was drained from a vehicle last spring and stored for reuse this winter, or if the anti-freeze solution was left in a vehicle during the summer, it is recommended that the following tests of the solution be made in order to determine if the solution can be used another season.

Test 1: Check the anti-freeze protective value of the solution with a conventional type of anti-freeze tester (hydrometer) equipped with a thermometer.

Test 2: Dip a strip of blue litmus paper in the sample solution. (Blue litmus paper can be obtained at any drug store.) If the solution turns the blue litmus paper distinctly red, the solution has deteriorated to such an extent that it should be discarded.

Test 3: If the solution appears rusty, allow a sample of the solution to stand in a clear glass container for a period of 24 to 48 hours. If the solution does not clear up to nearly water-white or with not more than a distinct trace of the original color of the anti-freeze material, the solution has deteriorated to such an extent that it should be discarded.

If the solution is not indicated as definitely bad by either Tests 2 or 3, a dosage of rust and corrosion inhibitor, recommended by the manufacturer of the anti-freeze, should be added to the solution, and the solution can then be reused.

Standard anti - freeze products (ethylene glycol and inhibited alcohols) contain special ingredients called "inhibitors" which are added by the manufacturer to protect the cooling system against corrosion and to prevent the formation of rust which clogs the radiator. Most of the ethylene glycol brands contain other inhibitors which reduce solution loss from creepage, seepage or foaming.

All the inhibitors used in anti-freezes may be weakened and exhausted by extended or hard use. Such variables, as driving mileage and speed, the condition of the engine and cooling system and operating temperatures of the solution are important factors in the non-corrosive service life of anti-freeze solutions. Contaminated anti-freeze solutions with exhausted inhibitors may cause more corrosion and rust formation than untreated water, if their use is continued indefinitely.

In cases where a permanent type anti-freeze is being reused for the third season, special attention should be given to testing the condition of the solution before reusing. In cases where permanent type anti-freeze has been left in the vehicle during the summer, the solution should be tested for acidity and rust. (Tests 2 and 3.) If the solution is found to be in good condition, a recommended quantity of rust and corrosion inhibitor should be added as a protection against trouble during the winter season. There is little danger from over-addition of the rust and corrosion inhibitors, but no more than one recommended dosage should be added at any one time.

It should be noted that the inhibitors do not increase the anti-freeze value of the solution and, as a result, new anti-freeze of the same type or brand should be added to the solution, as necessary, to produce the desired freezing-point protection.

Substitute Inhibitors: While it is simplest and easiest to use commercially compounded inhibitors, if these compounds are not available, the following chemicals can be used with care and intelligence on the part of the truck owner:

As a rust and corrosion inhibitor for clear water, add one ounce of sodium chromate (or one ounce of sodium dichromate plus 1/3 ounce of sodium hydroxide) to the contents of the average truck radiator. In making up a stock solution, use one ounce of sodium chromate to each four gallons of water.

As an anti-acid additive, sodium carbonate can be added to the used solution of alcohol or ethylene glycol. Dissolve sodium carbonate in the used solution only until blue litmus paper test gives a definite blue reaction.

How to Clean the Anti-Freeze Hydrometer: With continued use, the anti-freeze testing hydrometer may become dirty and difficult to read. Hydrometers may be cleaned by using a solution of one teaspoonful of tetra-sodium pyrophosphate (TSPP) in one pint of 150° to 170° F. hot water. After warming up the hydrometer, surge the cleaning solution in and out of the hydrometer until it is clean, then rinse with clear, warm water.

●

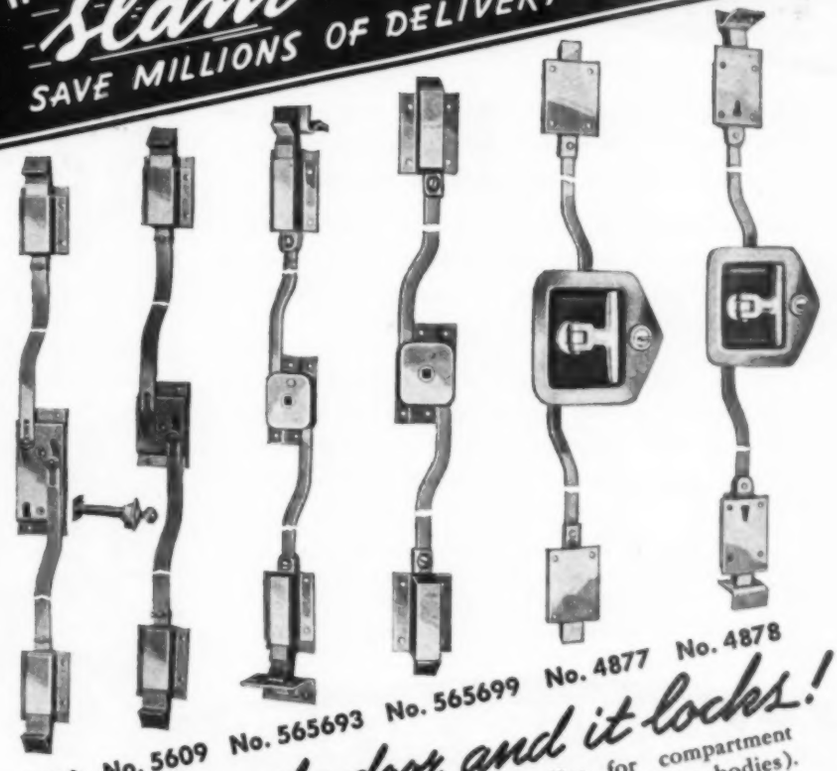
"Gentlemen of the Highway"

(*Continued from page* 90)

way hauler. In the second illustration the tractor-trailer is stopped at the side of the road and both driver and helper are setting out flares to protect oncoming traffic and in accordance with safety regulations. The

EBERHARD "slam" LOCKS

SAVE MILLIONS OF DELIVERY MINUTES!!



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With Eberhard "slam" locks the driver simply opens the door—removes his package and "slams" the door with knee or elbow.

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Nos. 5606 and 5609 locks are for *heavy* doors. Nos. 565693 and 565699 for *medium* doors. Nos. 4877 and 4878 "Recesso" locks (with recessed folding handles for compartment doors of tank and utility bodies).

All locks latch when doors are "slammed". Nos. 5606 and 5609-565693-4877 and 4878—"SLAM-TITE" also pull doors tightly against jambs. Nos. 5606-4877 and 4878 both "latch" and "lock" upon being slammed—offering protection to the loads.

You can use these locks profitably. Write for complete information.

No. 5603
A single point "RECESSO" slam lock.

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DIVISION OF
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BUILT especially to withstand the wear, tear and rough usage of commercial body service, Hansen Hardware readily adapts itself to heavy-duty performance.

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Whatever type of service in which Hansen-equipped trucks, trailers and tanks may be engaged, now or later, Hansen will stand up under hard, heavy-duty, gruelling service—for victory over repairs, breakage and replacements.

If you do not already have one, send for descriptive catalog showing the complete Hansen line of Commercial Body Hardware and one-hand Tackers.

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third scene shows the driver of the truck, his helper, and the uninjured passenger of the car, rendering first-aid to the injured occupant of the wrecked passenger-car, making him comfortable—and perhaps keeping him alive—until expert medical attention arrives.

Scenes like this have resulted in a growing appreciation among private motorists of the courtesy and helpfulness of the "Gentlemen of the Highway" who operate the nation's commercial vehicles. They have learned that the goods hauled by truck are vital to commerce, industry, national defense and the war program, and that the men themselves are highly valuable and responsible citizens.

And now that this situation has developed to the point where such practice is universal and widespread, there is a growing appreciation among fleet operators of the huge responsibility that goes with work of this kind. Some are wary that this self-appointment as highway samaritans may develop into a too formidable task. Others are worried that loads may be delayed and the war program slowed if highway misfortunes reach hitherto unpredictable numbers. And the tire situation bids fair to accelerate the situation—unless speeds are drastically reduced and only "necessity driving" is done.

An educational campaign is suggested, perhaps by means of inexpensive posters that could be mounted on the sides and rear of trucks, admonishing the private driver to "slow down" and conserve gasoline, his tires, his car, and maybe also his life. This might cut down the accident volume.

A little more "public relations" activity between truck operators and car owners, would seem to accomplish much in this direction, especially at this time. This might well be done now, *before* the tire situation sharply accelerates the accident-curve and probably results in a deluge of highway accidents too numerous for the "Good Samaritans of the Highway" to handle. There is a limit to all things, you know and this problem seems to be one that should bear careful analysis and consideration at this time.

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War Veterans to Help

(*Continued from page* 98)

he desires and for which he is qualified.

(6) *What About the Rehabilitated Veterans?:* Many employers, including those in automotive maintenance, are already employing veterans who have disabilities incurred as a result of the war. After a period of rehabilitation and training, these men are capable of performing satisfactory work and many employers are making provisions to employ additional numbers. The Veterans' Employment Service of the U. S. Employment Service can answer any questions you may wish to ask as to the procedures to be followed in obtaining such workers.

(7) *Do Many of These Veterans Have Experience as Auto Mechanics?:* With the emphasis on mechanized equipment in the present war, a large number of those in the armed services are returning with a technical training and background which fits them for almost immediate entrance into the automotive maintenance field. No doubt many of these veterans can be termed skilled mechanics, while others have received basic instruction in the care and maintenance of vehicles, which maintenance employers can use to advantage immediately. In effect, these men have received technical training and practical experience which it would take years to obtain in ordinary times. Some additional training will no doubt be necessary but a great many of these men should be able to fit into your work immediately and then be upgraded through refresher or retraining courses which are mentioned later.

(8) *Who Is Responsible for the Placement of Veterans?:* While a veteran may make his own arrangements for accepting employment, three agencies have responsibilities for assisting him to obtain a job. These are the

Selective Service System, the U. S. Employment Service, and the Veterans' Administration.

(9) *What Part Does the Selective Service System Play?:* The Selective Service System, through its local boards, has the responsibility of assisting those veterans who wish to return to their old jobs. Re-employment committeemen are attached to the local boards to assist in this procedure. The Selective Service System is utilizing the services of the USES for helping veterans find new jobs. However, you should make the acquaintance of the re-employment committeemen, since they will often know what veterans are seeking new employment.

(10) *What Part Does the U. S. Employment Service Play?:* The U. S. Employment Service plays a very important part in the employment of returning veterans. Both the Selective Service System and the Veterans' Administration are utilizing the USES to assist in the placement of veterans. Within the USES there is a Veterans' Employment Service which has the specific responsibility of carrying out this job. Each local USES office has at least one veterans' employment representative. The Veterans' Employment Service also has a representative attached to the administrative staff of USES in each state to coordinate veteran employment activities within the state. Make it a point to contact either the local or state man if you are thinking about employing returning veterans.

(11) *What Responsibility Does the Veterans' Administration Have?:* Among other things, the Veterans' Administration is responsible for the rehabilitation of disabled and handicapped veterans. Many of these will be men who can do useful jobs in transportation, and transportation employers should not overlook this source of recruits. The Veterans' Administration has field stations in about every state. They are also working closely with the U. S. Employment Service, so that any question you have on the employment of disabled or handicapped veterans should be directed to the USES. They can get you in touch with the proper authority.

(12) *What Part Does the Retraining and Reemployment Administration Play?:* This recently established agency in the Office of War Mobilization has been given over-all responsibility in the general supervision and direction of the activities of all government agencies relating to retraining and reemployment of persons being discharged or released from the armed services or other war work. Through their efforts a Veterans' Service Committee has been established in each state and similar committees are being set up in many communities. These committees will be composed of representatives of the Selective Service System, the U. S. Employment Service and the Veterans' Administration. They will cooperate with local organizations interested in the problems of returning veterans and if necessary will establish a community information center for veterans. Maintenance employers should keep the local Veterans' Service Committee fully advised of the opportunities for employment of veterans in transportation.

(13) *How Many Veterans Can You Hire?:* There is no limit to the number of returning veterans that you can hire, provided they have not been employed for as long as 60 days since their separation from service. In many states the employment of veterans at any time is permitted without regard to manpower ceilings. The veterans employment representative in USES can tell you the rules in your state.

(14) *What About Training for Veterans?:* Under the Servicemen's Readjustment Act of 1944 (GI Bill of Rights) almost any veteran who is honorably discharged is entitled to a refresher or retraining course. In addition, many veterans are entitled to more extensive training. Special provisions are made for assistance to disabled or handicapped veterans who undertake to learn a trade. Definite policies concerning the training part of the "GI Bill of Rights" are not yet available and therefore it is not possible to give a detailed description of

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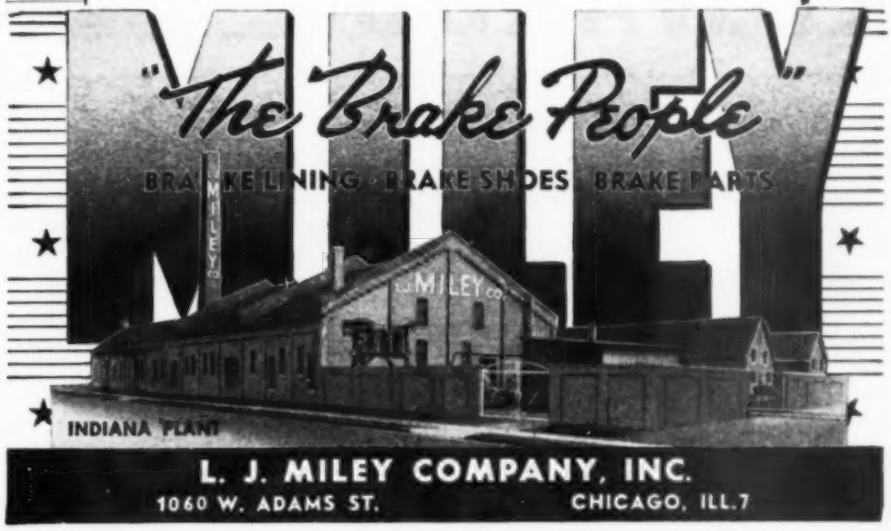

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EDWARDS SEMI-TRAILERS

how this will affect you. However, the law is designed to permit the veteran to select the type of training he wants to take and it will no doubt be possible to arrange either a full-time apprenticeship or part-time employment combined with part-time training in your local vocational school. For more information in this respect, you are again urged to contact the Veterans' Employment Service in USES.

To sum it all up, here are the steps you should take in employing veterans: (1) Contact the Veterans' Employment Division of USES. Tell them your story. Find out how they can help. (2) Contact the re-employment committeeman of your local draft board. Find out how he may be able to help you in obtaining such workers. (3) If you have a Veterans' Service Committee in your community, keep it advised of the employment opportunity in your establishment. Be available to answer any questions which they may ask from time to time. (4) If you know of any veterans who are returning, contact them directly if you know they are interested in automotive maintenance work. It is not necessary for veterans to clear through the USES in obtaining their first job.

New "Vacdraulic" Booster

(*Continued from page* 102)

and the hydraulic pressure is increased accordingly, the resulting movement of the control piston (B) causes the actuating plate (I) to open the air valve (J), so that air is admitted from the atmosphere (K) to the pressure side of the diaphragm, while the vacuum on the other side is maintained through the continuous suction (L) from the intake manifold. The admission of the air into the booster is modulated to apply the brakes with ease, and with a force proportional to the pedal pressure.

As the brake pedal is still further depressed, air continues to flow into the pressure side of the diaphragm, reaching atmospheric pressure there when full force has been exerted on the pedal. At this point the full power of the Vacdraulic booster will have been applied, since the diaphragm will have moved both pistons (B) and (D) to the end of their full stroke, with a proportionate increase in hydraulic pressure to the wheel cylinders.

The 2-to-1 ratio of the valve actuating plate (I) is said to assure very fast vacuum action and reaction of both valves. The total motion of the piston (B) necessary to close the vacuum valve (G) is approximately .040". This small movement gives very fine control of the braking power, the makers declare.

The relation between the larger area of the control piston (B) exposed to the fluid from (A) and the smaller area exposed to the fluid from (C) is the same as the booster ratio. Since the latter is fixed, and the follow-up action of the valves is said to be rapid and accurate, the reaction felt on the brake pedal is in a pre-determined proportion to the boosted pressure, thus providing an accurate "pedal-feel". The rod (M) is loosely fitted in the hole in the control piston (B) and serves to unseat the ball (F) when the brake pedal is fully released.

As stated previously, the driver operates the Vacdraulic booster brake by foot pressure, in the customary manner, and as the brake pedal is further depressed, the booster action goes into effect so smoothly that the driver is not aware when it begins to operate, according to the makers. It is also pointed out that the braking force may be tripled without requiring more than normal exertion, and that the driver's foot always gets the proper "feel" from the brake to enable him to determine the right amount of pressure to apply. The moment that the pedal pressure is released, the booster immediately returns to its neutral position.

Some of the chief advantages of this new booster unit, as stressed by the makers, are: the simplicity of construction, the light weight, the compactness of the unit and the ease of installation. All operating parts

are within the housing, where they are protected from dirt, water and damage. There is no alignment problem and no lubrication is required. A suitable air filter is furnished, to keep dirt from being drawn into the unit and the only attention required is the occasional cleaning of this filter.

The information in this editorial description has been prepared from an 8-page folder issued by the manufacturers. Further details may be obtained by writing to Empire Electric Brake Company, South 14th St., Newark 7, N. J.

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Engines for Post-War Trucks?

(*Continued from page* 78)

Aluminum bearings seem to be potentially capable of rapid development. Silver bearings offer quite a bit in load-carrying capacity and it is stated that they will permit extended life of the crankshaft. However, at the present time the silver bearing costs from two to three times that of the best present-day copper-lead bearing. New methods of manufacture, including the plating process, may considerably reduce the final cost of a bearing of this type and if it can be used for greater mileages it will certainly be acceptable.

In connection with the plated bearing, the art and knowledge of plating has progressed rapidly during the war and special platings of .0005" on a bearing can apparently make all the difference between one which will run 100,000 miles or more and failure in a few thousand miles, indicating that the texture of the finish as well as compatability of the metals can be a big factor in increasing bearing capacity and life. To date, lead and indium have been the metals most often used in the plating of commercial bearings, but considerable research has been going on with the plating of other metals and much is expected from this research.

With engine speeds increasing it seems imperative that we keep our piston weights as low as commercially practicable and this seems to point rather definitely to the continued use of aluminum. We know that ring groove wear is sometimes rather rapid when air cleaners are not serviced often, but that is a completely separate problem. Aluminum pistons may be produced by new methods or combinations of methods now in use so that the future piston may come from a machine which will produce a combined forged and extruded piston. These may be both stronger and cheaper to manufacture, even cheaper than the permanent mold casting.

The technique which has been developed in manufacture of aircraft piston rings will be continued in the production of commercial vehicle and passenger-car rings. Chrome plating of compression rings has shown a decided improvement in wear characteristics. It has been found that both the wear on the ring and the wear at the top of the cylinder barrel has been decreased remarkably, particularly when some dirt was present. Ring tension and radial distribution of ring pressure studies have been carried on and better sealing and better oil control can be expected.

A number of today's commercial vehicle engines of comparatively high output have been using the sodium-cooled exhaust valve. While the cost of these valves seems today to be rather high, methods of manufacture are now being developed whereby the cost can be materially decreased without affecting the life. Metallurgical advances in valve steels have progressed so that in engines of moderate output it may be possible to use the more economical plain valves.

Valve seats are being developed which may take care of some small misalignment and eccentricity of the valve or a head which is slightly tipped out of the plane perpendicular to the valve stem. These seats have been tried in some very high output engines and have given a very good account of themselves.

Oil pump capacity will undoubtedly have to be increased, for with high-

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er bearing loading, as well as higher rubbing speeds, more heat will have to be carried away by the oil; and oil may even be used for piston cooling, as it is in a number of today's Diesel engines. With this increased load on the oil, filters will have to take a greater part in keeping the oil in good condition and will have to do so with little or no attention. The filter that will efficiently service a high out-put engine will not be just a blown-up version of today's filters, for space in the engine compartment is even now at a premium and will continue to be in the future so that filters, along with all other accessories, must improve their efficiency as the engines are being improved, so that they will not end up by requiring twice as much space as the engines themselves. Oil coolers must also be considered as they, too, will have a bigger job to do in taking care of the additional heat which higher specific output entails and despite this higher specific output, we should be able to use the better grades of oil available today.

Carburetors will continue to be improved, in order to give more accurate and constant mixture ratios with better atomization, in order to facilitate the more even distribution among the cylinders. One way in which this might be accomplished is by adapting some of the characteristics of today's aircraft engine injection carburetion. This same adaptation might readily have an altitude control worked into the design at very little additional cost. This would undoubtedly be a great benefit to those truckers who are operating over mountainous country. Injection carburetion naturally leads to the possibilities of fuel injection. This may resolve itself into direct, manifold or port injection and appears to offer many possible adavantages, including that of a supposedly lower engine octane requirement with fuel injection, as compared to carburetion.

We are all cognizant of the effect of heat in reducing volumetric efficiency, yet most engines have an exhaust-heated hot spot or a water-heated intake manifold. The distillation curve of the average automotive gasoline has a fairly high end-point, and without the addition of this heat, distribution would be very difficult, for the wet ends of the fuel must be vaporized in order to get good distribution. With either direct or port injection the manifold would have to handle only air and, therefore, can be cold, thereby increasing volumetric efficiency and output over the entire speed range. Considerable work will, however, have to be done in the development of the necessary controls but when these are worked out we will, undoubtedly, find other advantages which at the moment seem to be of little consequence.

There has been quite a bit of discussion of the possibilities of water-injection for commercial vehicle engines. This has been a natural result of the use of water-injection for momentary bursts of power in combat aircraft engines. Considerable work was done on this problem at Wright Field about ten years ago and described by Ford L. Prescott at an A.S.M.E. meeting in St. Louis in 1935. At that time a definite increase in thermal efficiency was noted. This has been corroborated by further testing since then. In commercial vehicle engines we do not at the moment know whether other effects may be present, such as rapid rusting, increased wear

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or deterioration of the lubricants. There is much to be done on this problem and the possibilities look inviting. Injection of any type still is too expensive and will have to be materially simplified and reduced in cost, in order to compete with a simple carburetor.

We now come to the problem of supercharging and the results that we may expect from an engine with an integral supercharger design. It is generally accepted that the roughness of an engine, with a compression ratio increased to take full advantage of the high-octane fuel, will be sharper and more objectionable than that of an engine which uses supercharging with a lower compression ratio to take full advantage of this same fuel.

We may better be able to take advantage of the typical fuel characteristics of the fuels coming from so many of our refineries both in type and ratio that we may have little boost at the lower rpm's and gradually increasing boost as the speed increases. This would tend to give an engine octane requirement characteristic which would more closely approximate a constant octane requirement. At the same time this type of boost will tend to increase the horsepower without materially increasing the peak torque outputs so that the entire drive train from the clutch through the transmission and rear axle would not have to be materially increased in strength and correspondly in weight.

Many of the improvements in engine units will have to be incorporated in a supercharged engine, for greater durability and ruggedness will be required, due to the increased heat which each part must be able to withstand. Sodium-cooled valves will in all probability be required for the exhaust, perhaps even the intake. Oil cooling of the pistons may help to keep them in the correct shape and prevent burning. Necessary in today's engines — adequate cooling of the valve seats and combustion chamber parts will be even more necessary in the supercharged engine. We must have intake ports designed to get a full charge into the cylinder with the lowest restriction and the exhaust ports designed to get the exhaust gases out into the manifold with as little heat rejection to the water from them as it is possible with normal casting techique. It is every bit as important that we get the aforementioned good intake port design and good valve life with the supercharged engine as it is with the normally-aspirated engine, for every unnecessary fraction of horsepower that is used in pumping is just so much loss and, therefore, so much inefficiency.

We may confidently expect the engine manufacturers to redesign their engines to take advantage of many of the improvements we know are developed today as well as those still in the development stage. . . . Fuel in itself as well as its influence on engine design will be the most outstanding contributor to higher efficiency and horsepower output. . . . Supercharging will be used in those operations and territories which require large power units.

The manufacturers of the various component parts will keep up with and sometimes lead the demands of the engine manufacturer. Economics alone will force this, for competition will be keen and "the devil takes the hindmost."

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Plan for Post-War Safety

(*Continued from page 74*)

to each driver so that he can see the points to be covered and think about them as the conference develops. The leader should use a blackboard or easel to record the important contributions of the group. The results of the meetings should be recorded and handed back to the participants for review and study.

Many adaptations of the conference leadership method have proved popular with drivers. One of these is an occasional meeting of the drivers, with no management representative present, but where the results of such meeting are transmitted to the management.

As a means of varying the safety meetings, it has been found advisable occasionally to call in outside speakers for stimulation of the group. All local and National Safety Council programs offer valuable assistance through driver participation features.

Visual Education: Visual education of drivers should be constant. Bulletins and booklets put out by civic agencies, the National Safety Council, and insurance carriers contribute immeasurably to safe driving. Publications by these agencies are just as important for experienced drivers as they are for the driver during his training.

Sound slide films are fast becoming popular as a means of visual education.

Special Letters: If a fleet is scattered and large, it has been found advantageous for management to send out over its signature an occasional skillfully prepared letter. These may be prepared by safety consultants or by management individuals.

Where the fleet is large, a summary of its accident experience for a definite period, usually one year, should be prepared, utilizing some form of directional analysis. While this analysis need not be all-inclusive, it should indicate the types and circumstances of the accidents by showing the proportion of accidents occurring at intersections, on curves, on straight level roads, on railroad tracks, and should describe weather conditions and tell whether the driver was proceeding in a straight line or turning.

Personnel Relationships: Genuine interest by management in the welfare of its drivers pays dividends in accident reduction and improved employer-employee relations.

The management, either through its personnel department or that part of its organization functionally responsible for promotion of safe driving, should gain the confidence of its employees by encouraging them to discuss their personal home problems, such as money matters or illness. Careful guidance for the driver in solving such problems will go a long way towards eliminating the worry factor which increases accident possibilities.

Little Magnets of Safety: The range of possibility for attracting the employee and inspiring him to active participation in the safety program is almost unlimited. Typical of these little magnets are: an intensive "No-Accident Campaign" for a brief period in cases where the accident experience has been unfavorable; use of driver awards or rewards; publicity on bulletin boards relative to no-accident drivers; team competition; prizes at safety quiz sessions; and a host of others.

Conclusion: These minimum essentials represent a composite of

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- No Vapor Lock
- Added Protection

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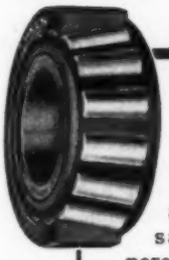

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many programs that have been found most effective for all sizes and types of fleets. There is reason for more emphasis on some items. In connection with extended training, more grouping of the various activities may be necessary with some types of fleets than with others. Some phases of a safety program for any organization may require periodically specific and detailed study and effort in line with changing conditions.

Fleet safety work, like all effective safety work, requires sustained assistance from various sources. Once the minimum essentials for operating trucks are established, the problem becomes—who upgrades the fleet superintendent, the driver trainer and the management? Safety consultants, councils and interested agencies must add their cumulative experience.

●

Tractor-Trailer Drivers

(*Continued from page* 100)

cargo truck and the 4-to-5-ton Federal and Autocar cab-over-engine tractors.

The heavy truck section at Camp Lee is directed by Lieutenant Gale C. Herron, who worked in his father's interstate trucking business at Salem, Ohio, before entering the Army. Assisting him are seven non-commissioned officers, each of whom has worked from three to ten years with commercial truck-trailer equipment.

The trainee, after an introduction to the equipment used, learns first to couple and uncouple the tractors and trailers. The steps in the process are easy, and when the trainee has watched an instructor block the trailer wheels, drop the dolly wheels, uncouple the air hoses, unlatch the fifth-wheel, and pull the tractor from underneath the trailer in the uncoupling process—and perform the reverse for coupling—he is ready to try it himself. Proficiency is what counts, and when the soldier has coupled and uncoupled the tractor and trailer around a dozen and a half times in the course of the week, he can usually perform the operation smoothly, and in from three to five minutes.

Truck tractors used by the Army have a five-speed over-drive transmission, with all five gears operative in the high range, and tremendous reserves of power latent in the low gear range. Double-clutching and operation of this type of gear-shift is, naturally, a new experience to many drivers, and to give the trainees confidence in this driving step, they are permitted to double-clutch and shift gears on the macadam "black-top" before taking the vehicle on the highway.

While the men have had some training in convoy driving before coming to the heavy truck section, this is their first experience at driving truck-tractor equipment in convoy. With three men to a truck, a section of around ten trucks drives in convoy, through the countryside surrounding Camp Lee. At a given interval the trucks halt to change drivers and hold a critique over the preceding movement, with Lieutenant Herron, who has ranged alongside the convoy in a jeep, to notice driving faults, pointing out any errors in driving. Lt. Herron watches particularly for correct observance of the proper driving interval, of gear-shifting, and the use of air brakes and hand signals.

When the men can handle the truck tractors properly, they are taught to use the tractor and trailer together. The driving course used to assist the

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trainee in getting the "feel" of the tractor and trailer would confound the average truck driver. Cut through a wood thicket near the training area, it would seem to be too narrow and circular for an average-size passenger-car to traverse. Yet the trainee, who may never have seen a truck tractor a week before, can, following instruction, back the huge truck tractor and the attached trailer around the circle. The object of this training is not to teach precision driving, so much as to develop ease of movement and confidence in handling the big vehicles. It is this which the training staff seeks to instil in the new drivers.

With training in operation practically completed, the men learn the principles and operation of the emergency air brakes. This is a special Army installation, which permits the application of braking power to the wheels of the trailer, with no retarding whatever of the truck-tractor wheels.

To conserve equipment for maximum use, Army trailers are generally scaled to a lower pay-load than commercial trailers of the same type. The net load limit on the Quartermaster box-type repair trailer reads 12,500 pounds, alongside the commercial trailer's 18,000, with the gross registering 31,700 pounds, alongside a gross of 39,000 pounds for a commercial trailer of the same type. Naturally, Army trailers may be loaded to a far heavier load in time of emergency.

Many heavy truck operators who were trained at Camp Lee are now doing valuable work on the supply lines of the United Nations. Heavy truck operators entering the Army who wish to continue their trade in the service are urged to detail their experience and background completely to Army classification officials when interviewed shortly after induction.

A few paragraphs regarding the types of trailers at present used in the Army might be of interest. The crew of a Quartermaster mobile shoe repair trailer, for example, operating in the field, will repair at least 400 pairs of shoes in two shifts of eight hours each—as many shoes as 25,000 American troops will wear out in a day. The trailer is towed to wherever repair operations are to be carried on, by a truck tractor.

Truck tractors operated by the repair organizations of Ordnance vehicle maintenance companies tow heavy trailers capable of carrying disabled trucks and tanks from the field of battle. Mounted military organizations use truck tractors and trailers for supplying horses and mules in the field. The Air Corps uses them in maintenance work—for carrying gasoline, and as crash wagons—while the Engineers Corps finds truck tractors and trailers indispensable for hauling pontoons, and in other construction activities.

The collection of used equipment for repair and reissue is a constant process in the Army. It must be, since shipping, rail or truck space may not always be available, even if replacements for old equipment are. Semi-mobile salvage repair battalions of the Quartermaster Corps repair shoes, clothing, textiles, canvas and rubber articles for reissue to troops in the field. Mobile medium maintenance companies of the Ordnance Division evacuate damaged trucks and tanks from the supply and battle lines, and heavy maintenance Ordnance companies, with semi-mobile shops and supply depots, furnish tools, equipment and personnel for repair jobs

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which the other vehicle maintenance organizations can't perform.

All of these organizations use truck tractors and trailers to effect mobile repair, and all of them, by furnishing troops in the field with much renovated equipment that would not otherwise be available, are responsible for conserving a vast tonnage of supplies.

●

WHO IS THIS GUY STEVENS?

● Many fleet men have asked your Editor whether the name *"Hoy Stevens"*, which has appeared on feature articles exclusively in FLEET OWNER during the past few years, is really representative of a flesh-and-blood person, or is just a pen name for some ghost writer.

So, gentlemen, meet Hoy himself. In lieu of a personal introduction, let us tell you something about him and let you in on what he looks like:

Mr. Stevens is a registered Professional Engineer in the State of Ohio. He holds B.S. and M.E. degrees from Case School of Applied Science, and a M.S. degree from Western Reserve University.

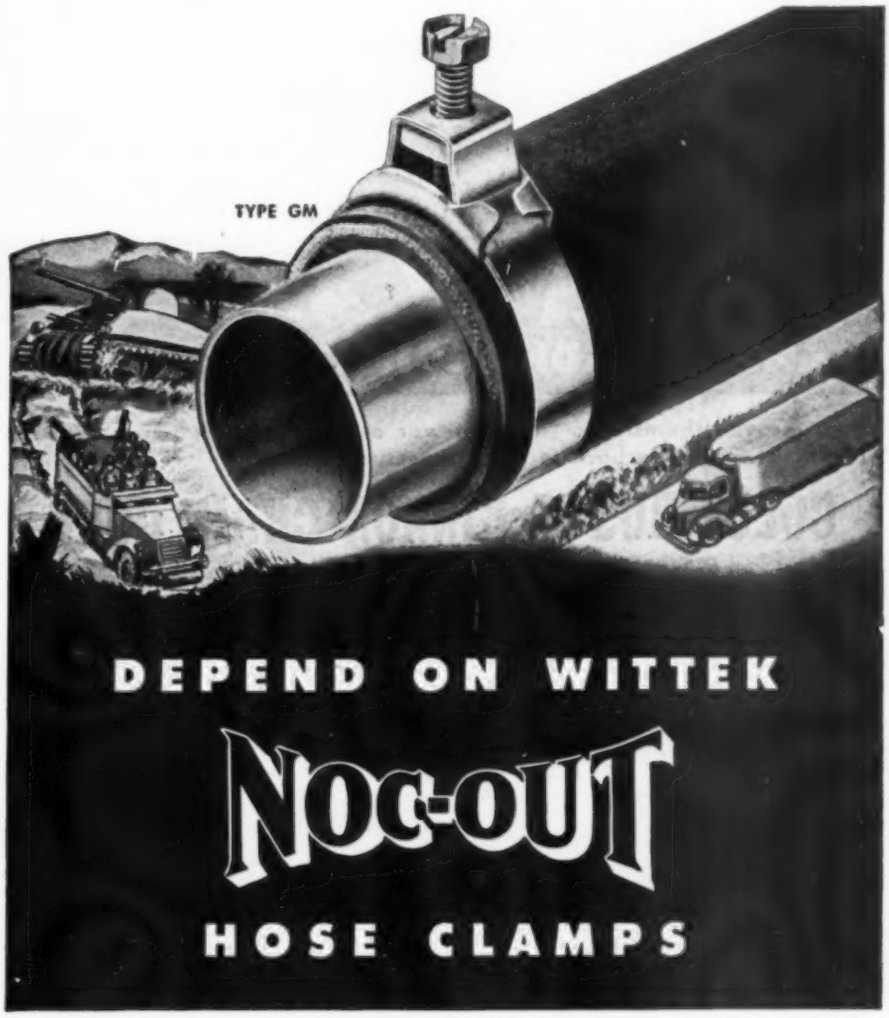
After leaving Case, he had extensive experience in all phases of plant and rolling stock maintenance, including work with trucks and buses, with the old Cleveland Railway Company. For a time he operated a small company engaged in manufacturing small inspection devices. Later he was superintendent of equipment for a large, over-the-road, motor freight hauler in Ohio—the CCC Highway, Inc.

Currently Mr. Stevens is doing consultant and advisory work on automotive maintenance, in addition to his monthly articles in FLEET OWNER —the latter as a hobby and side-line.

In the past, Hoy Stevens has developed a number of maintenance techniques, which, in our opinion, have been of real value in automotive preventive maintenance work.—*Ed.*

New Sea-Going "Weasel" Revealed

A NEW version of the Studebaker "Weasel" was recently unveiled. . . . It is designated by the Army as M-29C and features a boat-shaped body, retaining the broad tracks and light weight. . . . No changes are necessary when it enters the water or climbs back on land, with the exception of the operation of hinged rudders. . . . Water propulsion is obtained by the same tracks which carry it over the land. . . . The chief feature of the "Weasel" is its light weight and broad tracks that assure traction in terrain that would stall more conventional units.



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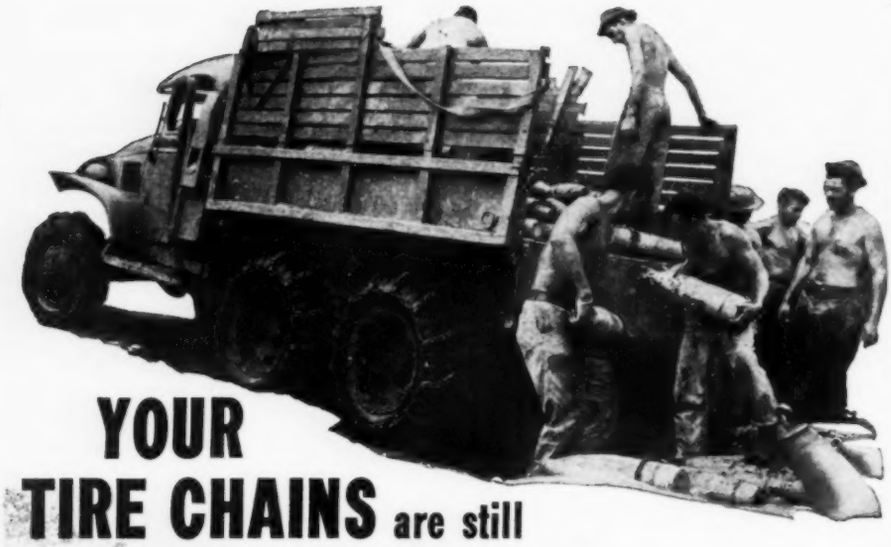

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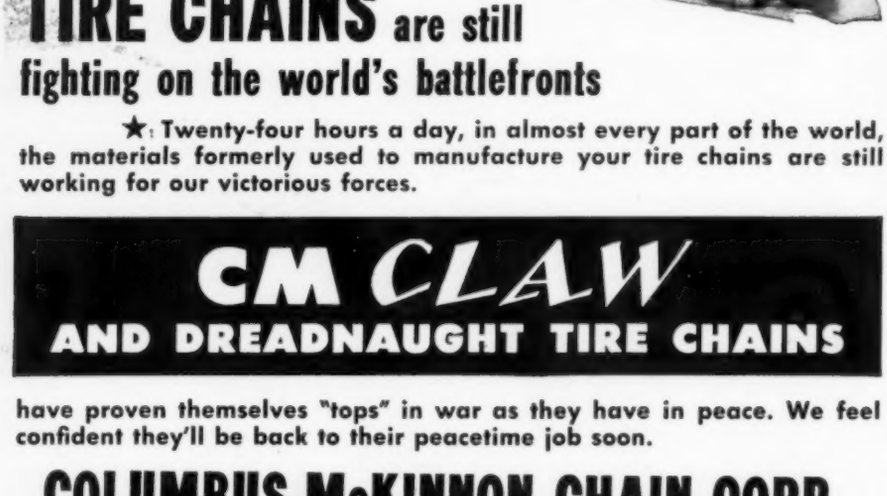

TRUCK "PRIORITY" LIST

● When ODT recently took over the allocation of new commercial vehicles from WPB, it adopted new standards and procedures, designed to do the job with utmost fairness to all concerned. The first thing they did was to classify businesses based upon their importance to the war effort and the civilian economy. . . . The following tabulation is used by all ODT allocation officers. . . . In making application for a new commercial vehicle, therefore, you should carefully review this tabulation, in order to determine just how good your chances for a new vehicle will be. . . . The usage classification follows—we quote:

Usage Classification List for New Commercial Vehicles: The following classification of new commercial motor vehicles on the basis of use applies to light, medium, heavy trucks, truck-tractors, trailers, and the chassis thereof. It will serve as a broad general basis for the preferential allocation of the supply of such new vehicles. . . . The various classes are arranged in the order of their importance from the standpoint of the national war effort. Individual groups within a given class are shown as illustrations of the coverage of a class and do *not* indicate preference groups within the class. . . . All vehicles are to be classified according to their predominant or principal use into five classes arranged in the order in which preference is to be granted. As a general rule, predominant or principal use means 50% or more of the applicant's operations. . . . The Usage Classification is as follows:

Class 1—Vehicles principally used in connection with military forces (in action or on maneuvers), public health or safety, or with essential channels of communications, such as: To maintain public police services; fire fighting services; services essential to the protection of public health or safety, including the regulation of highway traffic and the prevention of highway accidents. . . . To construct and maintain mail, telegraph, telephone and organized radio communication services. . . . To furnish and maintain water supply, sewage and garbage disposal and other sanitation services.

Class 2—Vehicles principally used directly in connection with the war effort, such as: In connection with fixed military and naval posts and establishments. . . . In the transportation of all materials, supplies and equipment of industry and business directly connected with the war effort, including farm, forest and mine products and food. . . . In service operations connected with the construction, maintenance and supply of essential rail, highway, water, pipeline, and air transportation facilities. . . . In the transportation of material and equipment for the construction of defense housing facilities. . . . In the transportation of material and equipment for the construction and maintenance of public utilities other than those specified in Class 1 above. . . . In the transportation of persons engaged in business, industry, etc., directly connected with the war effort.

Class 3—Vehicles principally used in connection with essential functions indirectly connected with the war effort, such as: In the transportation of all materials, supplies and equipment of industry and business indirectly connected with the war effort, including farm, forest and mine products and food. . . . For the transporta-

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tion of ice, and fuel for heating and power to the ultimate consumer for personal, family or household use. . . . For the rendering of essential roofing, plumbing, heating, electrical, building and vehicle repair service. . . . For the collection of waste and scrap material other than services performed in connection with Class 1. . . . In the transportation of persons in business, industry, etc., indirectly connected with the war effort. . . . In the service of public and private schools and education institutions.

Class 4—Vehicles used for the transportation of persons or goods, except as above classified, not connected with the war effort, and which are used in the less essential activities. . . . This includes all essential forms of retail delivery, except that of ice and fuel (see Class 3.)

Class 5—Vehicles used in connection with non-essential functions, or so-called "luxury" uses and not connected with the war effort.

In addition to the routine filling out of your ODT-663 form, it is vitally important that every applicant prepare a completely detailed factual statment outlining his exact business, why he cannot purchase a satisfactory used vehicle instead of applying for a new one, why he cannot rent or lease a satisfactory additional vehicle, why the necessary shipment or delivery of the merchandise cannot be handled by other common rail or motor carriers, and why the presently owned vehicle cannot be further repaired and continued in service. Any documentary evidence—affidavits from shippers proving present service inadequate, unsafe or unreliable (due to vehicle condition) — statements from truck repairmen proving present vehicle cannot be further repaired —will be helpful in assuring most complete consideration.

•

JOHNSON'S TIRE REPORT

• With many trucks and buses "down" all over the country, the severe shortage of heavy-duty truck and bus tires for replacement purposes will continue through the fourth quarter of 1944 and a spread of the tire shortage to the smaller size truck tires is in prospect, Col. J. Monroe Johnson, director of ODT stated early last month.

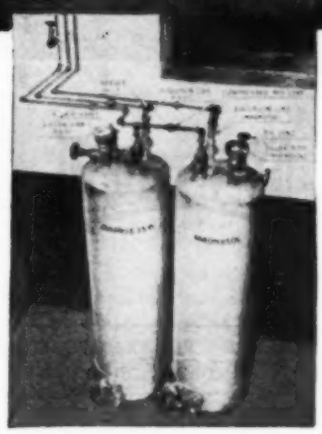
Colonel Johnson said fourth-quarter tire allocations by WPB for October, November and December were far below basic requirements on tires in sizes 8.25 x 20 and up. Because of its decision to satisfy expanded military requirements the WPB, in acting upon an ODT appeal from the unsatisfactory civilian allocation, increased the heavy-duty allotments only slightly and made a drastic cut in the smaller size truck tire allotments.

The resulting deficit in smaller size tires will affect principally farm trucks and those used in making deliveries of milk, bakery products, laundry and in performing many other essential services, the ODT director said.

The allotment of tires for replacement purposes reflects drastic curtailment by ODT in its assignment of tires for new vehicles, the ODT director explained. The number of tires actually assigned for original equipment on new vehicles in the fourth-quarter is 206,056, which represents a 35.4 per cent decrease from the amount originally requested to meet the new vehicle program in full.

"Also, the volume of tires remaining

An Ideal Body Washing Set-Up!



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The installation involves two 30-50 gallon heavy duty welded tanks, one holding a solution of 55-P in water and the other the Magnusol solution. Lines from a compressor maintain a pressure of 60-100 lbs. in these tanks, so that solution from either can be obtained as desired, under pressure. Solution lines with shut-off valves and nipples for hose connection lead from the tanks to a position convenient to the wash rack and drain.

The solution best suited to the body being cleaned is sprayed on, allowed to soak in and brushed lightly with a long handled brush, if necessary. Then the surfaces are flushed off with water.

You can speed up your body washing operations and improve both quality and cost of cleaning by using this system for two cleaners, or modifications of it to suit your own lay-out. This whole question is very thoroughly discussed on Pages 21 to 25 of the Fleet Operators Cleaning Handbook.

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Yankee automotive devices have always had that *EXTRA* margin of Quality—enough to make them winners and therefore the standard of acceptance. Their rugged "staying qualities" have made them tops" at the pay-off.

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Fleet Operators and the "pilots of the road" know the value of a safe haul. Rigidly controlled scientific testing of Yankee Products by Yankee Engineers and then by recognized reputable testing laboratories has always given Yankee merchandise that *EXTRA* margin of safety so important these wartime days. No wonder the man behind the wheel says "You're safe when you can see or be seen with Yankee Safety Devices."

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for replacement purposes will permit rationing at the rate of only 96,832 tires in sizes 8.25 x 20 and larger per month," Colonel Johnson said. "This level is but slightly more than one half of the estimated requirements of 189,599 such tires needed to restore essential motor services to the approximate volume actually supplied during the first six months of 1944."

"The 96,832 heavy-duty tires that can be made available through the rationing system each month during the fourth quarter fail by a substantial margin to satisfy replacement requirements of the services rated with top priorities 1 and 2 in the WPB and WFA Essentiality List."

The ODT director said that after meeting new vehicle program needs, the fourth-quarter allotment of tires in the 7.50 x 20 and smaller sizes will provide 251,052 tires monthly in these sizes for replacement purposes or enough to supply only 72.7 per cent of the requirements of essential operators. These estimated requirements were placed at 345,272 tires monthly.

Reports received by the ODT, Colonel Johnson said, indicate that widespread curtailment of essential motor transportation services has already taken place because of the shortage of heavy-duty tires. Trucks down include a considerable number which haul aviation gasoline to airfields, he said, and although this service has been given the highest tire priority, tank truck operators frequently cannot obtain tires after they have secured certificates.

"With the present level of allotments for the fourth quarter, these breakdowns will occur more frequently and will become progressively more serious as the average condition of tires on running wheels deteriorates, as all spares and fleet reserves are used up, and as the used-tire supply becomes further depleted," he said.

The ODT director also pointed out that when the critical shortage of the third-quarter was encountered, truck and bus operators had a reasonable volume of emergency reserves and spare tires, and the average condition of tires on running wheels had not deteriorated to an alarming degree. Now, he said, few operators have reserves and a great many have utilized all their spares to keep their vehicles in operation.

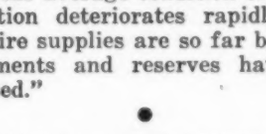
"The precise amount of disruption in essential rubber-borne truck and bus services that will occur as a result of the fourth-quarter deficit cannot be predicted," Colonel Johnson said. "But I cannot too strongly emphasize that curtailment at a disturbing rate has already occurred in some of our most essential services. Moreover, the curtailment and disruption in essential services will be cumulative, since the average condition of tires in operation deteriorates rapidly when new tire supplies are so far below requirements and reserves have been depleted."

•

NEW WPB "RUBBER BUREAU"

• J. A. Krug, Acting Chairman of WPB, announced last month that, following the recommendations of Col. Bradley Dewey, Rubber Director, the President had issued a Directive abolishing the Office of Rubber Director and that a Rubber Bureau had been set up within WPB, with James F. Clark as Director. . . . Mr. Clark has been Assistant Deputy Director of the Office of Rubber Director since October, 1943.

The new Rubber Bureau will function under the direction of the Opera-



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tions Vice-Chairman of WPB to oversee industry problems and the administration of the Rubber Order. In so doing it will follow closely the routines and policies of the Office of Rubber Director and will, as in the past, act as an over-all claimant agency for the industry requirements of special materials as well as synthetic rubber. The operation of the synthetic rubber plants and the carrying out of research, development and testing will be in the hands of the Rubber Reserve Company, under the direction of Secretary of Commerce Jesse Jones.

Mr. Krug said further that L. D. Tompkins, former Deputy Rubber Director, would act as a consultant to him and to Mr. Clark in connection with the operations of the Rubber Bureau, and that he had asked Colonel Dewey to head a committee which would serve from time to time upon request as advisors to him on any problems that may arise in connection with inter-agency relationships as well as technical problems pertaining to all phases of synthetic rubbers and their uses.

Mr. Krug said this committee would be made up of Colonel Dewey, Chairman; L. D. Tompkins; Dr. E. R. Gilliland, former Assistant Rubber Director in charge of Research and Development; E. B. Babcock former Assistant Rubber Director in charge of Product Development and Conversion; and Dr. C. C. Monrad, former asssistant to Dr. Gilliland.

●

RUBBER ORDER REVISED

● One of the last actions of the Office of the Rubber Director (before Mr. Dewey's resignation became effective and before the office was abolished) was to announce a revision of the basic rubber regulations (Rubber Order R-1). . . . The revision provides a compilation of all rubber directives and amendments issued to date.

The revised regulations include a number of provisions reflecting progress in the nation's conversion from crude to synthetic rubber, WPB said. Among the new provisions are the following:

1. The revised rubber order requires all medium-sized highway truck tires to contain 90 per cent synthetic rubber instead of the former 70 per cent. Furthermore, special-purpose tires, including earth-movers, rock-service and logger types, have been converted from 100 per cent natural rubber to 35 per cent synthetic. The increased supply of high-tenacity rayon cord has made it possible to extend the synthetic rubber use to these groups of tires, since rayon produces a more satisfactory synthetic tire.

2. All truck tire inner tubes and a large group of airplane tire inner tubes are converted to synthetic rubber.

3. Use of neoprene and Buna N is now permitted without restriction in all wire and cable construction, while use of crude rubber has been further restricted in wire and cable applications.

4. A procedure has been established for obtaining (a) Buna S, a general-purpose synthetic rubber; (b) reclaimed and (c) scrap rubber, for consumption in products where formerly use of these types of rubber was not permitted. Effective September 1, WPB field offices have been designated to receive applications on WPB Form 2242. WPB Form 3820—revised (Statement of Manpower Informa-

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By thoroughly cleaning your cooling systems of rust and scale, PH7 restores and maintains peak cooling system efficiency. The result—gas and oil consumption go down—costly overheating repairs are eliminated.

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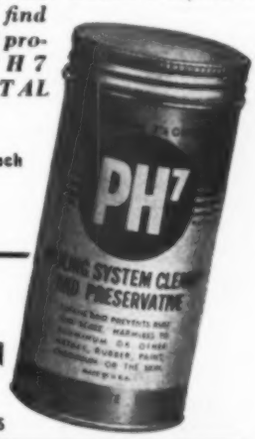

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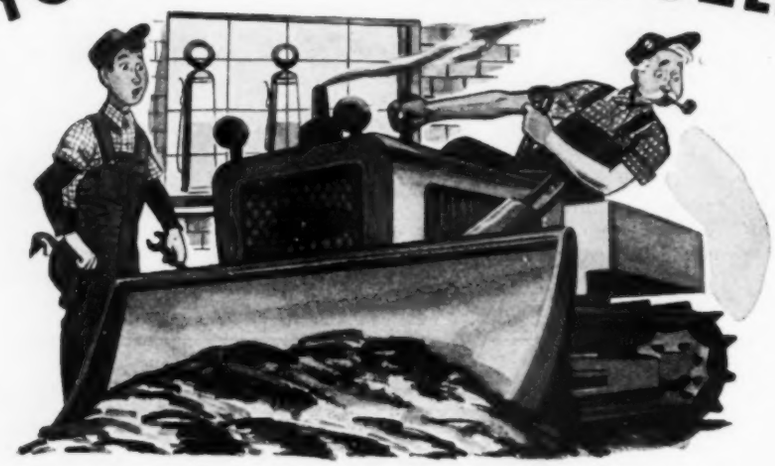


when you clean garage floors with SOL-SPEEDI-DRI

THE fellow who hired a bulldozer to scrape up the oil and grease from his shop-floors (yes, it actually happened!) could have saved himself a lot of time, trouble, and money if he had simply spread SOL-SPEEDI-DRI, for this remarkable material soaks up oil and grease like a blotter soaks up ink. Even old, ground-in deposits give way to SOL-SPEEDI-DRI in time, restoring floors to near-new condition.

Meanwhile, fresh oil is kept off the floors, slipping accidents are eliminated, fire is retarded, and customer-relations are improved. You can toss your oily wrenches and other tools into a box of SOL-SPEEDI-DRI and when you want them again, they'll be oil-free. Thousands of shops are using this product to save themselves hours of back-breaking labor. It's great stuff! Write for literature and generous FREE SAMPLE.

SUPPLIERS: East—Refiners Lubricating Co., New York 1, New York.
Midwest & South—Waverly Petroleum Products Co., Philadelphia 6, Pa.
West Coast—Waverly Petroleum Products Co., Russ Bldg., San Francisco 4, Calif.

SOL·SPEEDI·DRI
OIL AND GREASE ABSORBENT

tion) must also be filed. No special authorization will be granted under this procedure if contemplated production in any way interferes with war production or with the production of essential civilian articles. . . . Labor and facilities to manufacture non-permitted products from Buna S, reclaimed and scrap rubber must be available to the applicant and must not be required for essential purposes.

5. Elastic thread manufacturers are now permitted to use neoprene without restriction. Officials consider neoprene a very satisfactory synthetic rubber for the production of girdles and similar articles.

CHAIN PICTURE STATIC

● Civilians cannot hope for early procurement of tire chains beyond the present quota, the Tire Chain Industry Advisory Committee was told by WPB recently.

WPB Priorities Regulation 25, issued last month, established methods to be used in authorizing resumption of civilian production as local conditions permit. However, despite public expectations, there is little probability of an immediate increase in tire chain production for civilian uses while war supplies remain critically short, a WPB official said.

Insufficient side-chains and other components for use with U. S. Army ordnance depot stocks of cross-chains, may hamper production schedules, industry members indicated. Since cross-chains are the most difficult part to manufacture, it was suggested that those held in depots would be useful in speeding up deliveries of tire chains on current schedules if industry could acquire title to them.

About 1,000,000 feet of 5/16-inch and 9/32-inch side-chain would have to be secured for final assembly with the cross-chain stocks at strategic points near depots stocking the cross-chain, the committee said. . . . Appreciable quantities of chain have been returned from Africa for reclamation, members were told.

Military tow-chain requirements for 1944 have been subjected to heavy reductions, a Government official said. No tow-chains will be provided for trucks used in this country, he added. All chains have been shortened and the amount of spares and replacements reduced. . . . Production of winch line chains is generally up to schedule, committee members said.

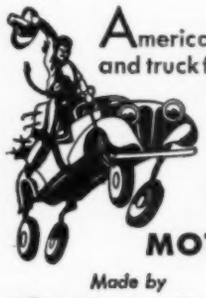
●

1942 TRAILER PRODUCTION

● The WPB has at long last issued trailer production figures for the year of 1942, covering civilian and military "truck-type" trailers. . . . The total for the year is given as 79,928 units, with 8,408 going to civilian users and 71,520 to the military.

These figures represent the number of vehicles produced—not factory sales or factory shipments. Included are full and semi-trailers, conventional or frameless, chassis for such conventional full and semi-trailers, and pole, logging and pipe trailers. Excluded are "suspensions" for frameless trailer units. . . . Military trailers include those procured by Army, Navy and other agencies for military purposes. Civilian trailers include those produced under War Production Board Limitation Orders and those procured by non-military agencies for civilian use.

These data represent approximately 100 percent of the industry authorized to produce trailers and are based



America's leading bus, cab and truck fleets BATTLE SLUDGE with the nation's largest-selling motor tune-up . . .

Whiz MOTOR RYTHM

Made by *Hollingshead*

LEADER IN MAINTENANCE CHEMICALS

POST-WAR PLANNING DEP'T
"I SEE NOTHING BUT YEARS OF SAFE SERVICE WITH AN ASF 5th WHEEL!"
AMERICAN STEEL FOUNDRIES
Automotive Division, 400 N. Michigan, Chicago 11

on reports of 102 manufacturers. . . . Trailer production figures for years prior to 1942, and after, have been given in previous issues of this publication.

•

LOOSE "A-12" STAMPS O.K.

• Gasoline rationing coupons numbered "A-12" that are detached and loose from ration books, may be accepted by filling station operators, OPA announced last month. . . . At present this only applies in states outside of the Eastern shortage area. —(*Amendment 151 to Ration Order 5-C*).

•

70,000 MORE TRUCK TIRES

• A total of 70,000 new and used small truck tires declared "surplus" has been disposed of recently under the plan of national redistribution initiated by the Office of Surplus Property, Treasury Procurement Division. . . . The tires were sold back to 23 of the 26 tire manufacturers in this country, who in turn will pass them on to regular distributors.

•

GAS STAMP ENDORSEMENT

• After the first of October, operators of fleets of commercial motor vehicles that do not bear fleet designations, must endorse their gasoline coupons by writing their names and addresses on the face of such coupons, under a change in endorsement requirements announced last month by OPA.—(*Amendment 149 to Ration Order 5-C*).

•

NEW "DRIVE" BY WPB-ODT

• An extensive drive to secure the full cooperation of the nation's shippers and receivers in getting more use out of existing transportation facilities during the coming peak-load months, was announced recently by the Transportation & Storage Division of WPB. . . . This seems to apply principally to rail transportation, however, and ODT reported that car-loadings are currently exceeding 1943 levels.

END OF TIRE RECORDS

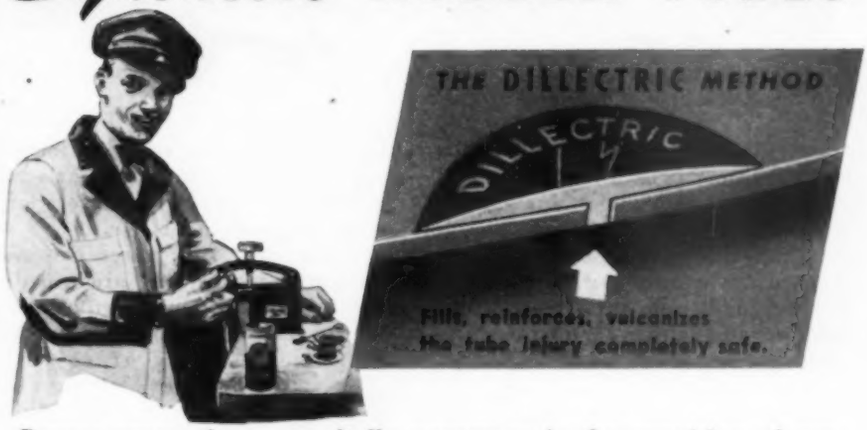
• Passenger-car tire inspection records will not be used in rationing after current "A" gasoline ration books expire, OPA recently announced. . . . New "A" books went into use outside the East Coast area on Sept. 22nd. . . . In the 17 Eastern Seaboard States and the District of Columbia, the new "A" book under present scheduling will not be used until November 9, 1944.

Since discontinuance of the periodic tire inspection program on April 20, 1944, the tire inspection record kept by every motorist has been used primarily as a record of gasoline rations issued each automobile.

Along with the new "A" gasoline ration book, each motorist will receive a new Mileage Rationing Record, which will thereafter serve as the record of gasoline rations issued. As soon as this is done, the old tire inspection record will no longer be necessary.

OPA emphasied that all motorists should keep their tire inspection records until they apply for their new "A" books. Announcements concerning disposition of the tire inspection records will be made locally at appropriate times.

AVOID REPAIR FAILURES IN *Synthetic* RUBBER TUBES



Proper precautions are vitally necessary in the repairing of synthetic rubber tubes. The nature of synthetic rubber requires careful vulcanization of the injury and controlled vulcanization of the repair to obtain a secure job. The Dillectric method, now used by thousands of repair men, assures complete repair safety. Its simplicity, convenience and low cost is the proven solution to your tube repair problems.

INSTRUCTION MANUAL *Free* ON REQUEST

DILLECTRIC
REG. U. S. PAT. OFF.
Electrically VULCANIZED TUBE REPAIRS

Write, now, for the Dillectric Instruction Manual which pictures and describes in detail the proper preparation and vulcanization of synthetic tubes.

THE DILL MANUFACTURING COMPANY
700 EAST 82nd ST. • CLEVELAND 8, OHIO

On the War Front with

It takes dump trucks, too, to win this war! Dump trucks like this Federal 26 with hydraulic hoist dumpbody! Join with us in saluting these Federals for their efficiency in preparing the way for our armies to follow . . . for helping build the airstrips for our bombers and fighters . . . for the thousand and one tough jobs that are routine for them.

Protecting these Federal Engines from abuse are Hoof *full power* Governors . . . they're a vital factor in conserving the stamina that's built into these engines without restricting their great engine power.

While Hoof *full power* Governors have gone to war, they are also available under existing regulations to to the transport industry. Write for a copy of the *Free Booklet*, "Everything Under Control," and the name of your nearest Hoof Jobber.

HOOF PRODUCTS COMPANY, 6543 SOUTH LARAMIE AVENUE, CHICAGO 38, ILLINOIS

HOOF *FULL POWER* GOVERNORS

MORE ABOUT GOV'T. CONTROL

● Members of the Midwest Operators Association were recently given 60 days to declare that they do not want to operate under governmental supervision, and if any decide that they wish to go on record against this operation, they may give power-of-attorney to the Association, according to ODT's Longenecker, administrator of the 101 truck lines of the Minnesota-Iowa-Nebraska-Dakotas area now in operation under ODT control, as a result of the recent drivers' strike.

●

FIELD-DAY FOR STATES?

● State treasuries are enjoying wartime prosperity in measure that caused tax collections for the fiscal year ended June 30th, 1944 to reach a new high total, according to the Department of Commerce. . . . It was said that motor vehicle fuel tax receipts continued to decline, but that there was a noticeable slowing up of the rate of decline. . . . Motor vehicle and operators' licenses showed an increase of one percent over collections for the previous fiscal period.

●

ONLY ONE CAR A YEAR

● Revised regulations for purchasing used automobiles in Canada provide that an individual may purchase only one car during any calendar year, according to the Department of Commerce. . . . Fleet owners and other commercial operators of passenger-cars who had five or more vehicles registered in their names during 1943 may purchase one used car for every five registered.

●

TIRE INSPECTION FORMS OUT

● Passenger-car tire inspection records will no longer be used in rationing, after current "A" gasoline ration books expire, OPA announced last month. . . . In the Eastern states, such tire inspection forms must be retained, however, until next November, when current "A" books expire there.—(*Amendment 85 to Ration Order 1-A*).

NOT RATIONED:

● No ration certificate is now needed for any of the following rubber articles: New tubes—all types; used tubes—all types; used tractor tires; used implement tires; new and used highway and industrial solid tires; new industrial cushion and zero-pressure tires; new industrial pneumatic tires of the sizes specified to be used on wheel "equipment" other than highway vehicles and farm tractors and implements; new and used tires for bicycles, lawnmowers, velocipedes, sidewalk scooters; recapping—all tires. . . . Certification as provided in R-1 is required on highway and industrial solid tires; pneumatic industrial tires and tubes; cushion and zero-pressure tires used on equipment.

●

EMERGENCY TRUCK TIRES

● Due to the possibility of emergency situations where a bus or truck operator may need a tire on the road, OPA has modified the tire regulations so that the district director may instruct the local truck tire board to issue a certificate under such conditions.

PREMIER
DIRECTIONAL SIGNALS
For New Vehicles *Many Types*
For Replacements
PREMIER SIGNAL CO., Bellevue, O.

10-Yr. Expenditure on Roads and Streets

TOTAL street and highway construction and maintenance expenditures for the 10-year period, 1933-42, amounted to $17,754,000,000, according to the United States Public Roads Administration.

Construction costs totaled $8,190,000,000, with the Federal Government supplying $2,160,000,000, the states $3,030,000,000 and $3,000,000,000 spent by counties, cities and towns.

Maintenance costs of roads and streets for the decade amounted to $5,365,000,000 with the states spending $1,931,000,000; counties, cities and towns $3,434,000,000; and Federal Work Relief $4,199,000,000.

Expenditures by years on street and highway construction and maintenance by all agencies were:

1933—$1,110,000,000	1938—$2,177,000,000
1934—$1,554,000,000	1939—$2,173,000,000
1935—$1,290,000,000	1940—$2,110,000,000
1936—$2,022,000,000	1941—$2,026,000,000
1937—$1,824,000,000	1942—$1,468,000,000

●

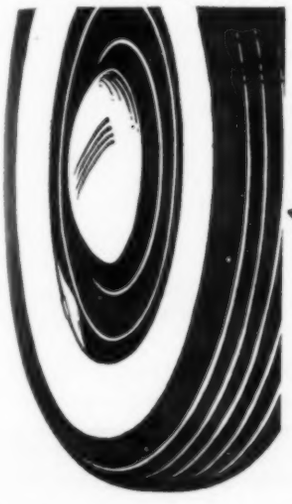
Navy Finds New Oils Keep Engines Cleaner

SEVERE Navy tests of diesel engine filters have revealed that the new detergent, or additive-type lubricants largely have solved the problem of keeping engines clean; filtration now serves chiefly to remove abrasives, the SAE National Diesel-Fuels & Lubricants Meeting was told recently.

The information came from Lieutenant H. V. Nutt, USNR, of the U. S. Naval Engineering Experiment Station, Annapolis, Md., who said lubricants have been so greatly improved as to take over the filters' reputed functions of reducing valve and ring sticking, blow-by, and bearing corrosion.

The Navy now uses four standard filter sizes, two large and two small, instead of the more than 40 varieties once installed, Lieutenant Nutt reported. Abrasives are maintained at lowest concentration, he said, by circulating oil through filter elements at the highest practical rate possible with "shunt" operation, high oil temperatures, and a high pressure-drop across the filter element.

Describing the various functional tests of filters made by the Navy, he said these are augmented by shock and water immersion tests simulating combat conditions. Filters are subjected to 20 blows from a 50-pound hammer dropped six feet, and to 16 hours of immersion in heated salt water.



SNUGL
FADE-A-WAY
AUTOMOTIVE
Wheel Balancing Weights
Trucks Buses Passenger Cars

Used by U.S. Government
Pat. Nos. D119 321, D 5 189, 2 052 295, 2 036 757

Factory:
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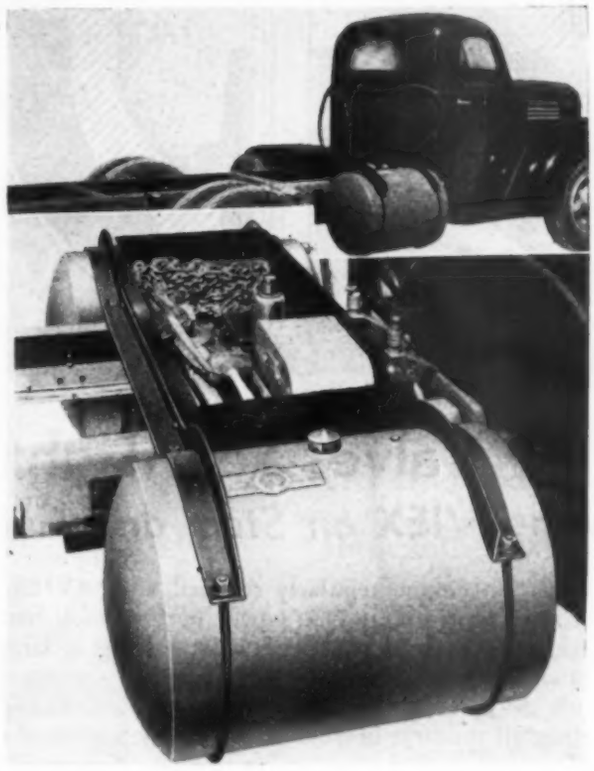
PRIOR
Safety TANKS
FOR TRUCKS



PATENT PENDING

Prior Safety Tank and Tool Box Assembly with Special Well for Hydraulic Jack Is a Cost-Cutting Combination for One Truck or a Fleet.

● When you add Prior Safety Tanks to your trucks, you increase operating efficiency by making possible the purchase of fuel in large quantities from your cheapest source, and eliminate frequent refueling stops on long runs. The exclusive *curved* angle iron suspension, and the Prior adjustable side mounting brackets (for single tanks) provide three inches greater road clearance.

All Prior Gasoline Tanks are cylindrical, with dished heads for extra strength; are made of 12-gauge steel, pickled and oiled to prevent scale and corrosion; are 100 per cent electrically welded; pilfer proof, and equipped with fusible alloy plug to prevent explosion in event of fire.

The exclusive Prior Tool Box feature provides sturdy, spacious tool storage, *and a special well in which the Hydraulic Jack always stays in an upright position.* The box may be securely locked.

PRIOR PRODUCTS
DALLAS, TEXAS • CLINTON, ILLINOIS
Wire Us for Name of Nearest Dealer and Complete Information

Valves Seat Tightly
with AVIEX *on Stem and Guide*

● An engine regularly serviced with AVIEX will not only keep up its best power performance, but will start easier in cold weather. Easy starting is largely a matter of having sufficient compression—*at the start.* With AVIEX in your engine oil and fuel, valves seat tightly all the time because of constantly lubricated stems and guides. Good compression results. And, good compression is further insured by adequate lubrication of the cylinder walls, pistons, and piston rings, producing a tight seal.

Right now, during critical war times, periodic use of Motor Tune-Up Oil, protects your engine oil against breakdown, prevents gum and varnish formation, lowers internal engine friction and corrects retarded valve action. And here's a point. NO WARMING UP with the AVIEX tuned engine. It's always lubricated—no need for a slow idle.

AVIEX keeps rings free—less carbon in combustion chambers—less sludge. Positive solvent action of AVIEX on all residue which tends to form in the oil keeps such residue in solution. Absolutely no harm to metals.

Do as so many other fleet operators are doing—use AVIEX regularly, in hot or cold weather. It will cut your operating costs. Let us tell you how.

(You save money treating bulk oil by buying Aviex in 55, 30, 15 or 5 gallon drums.)

UNITED STATES AVIEX CO.
NILES, MICHIGAN

Some Helpful Hints on Sludge Control

METHODS of preventing the formation of oil sludge in engines of commercial motor vehicles, a contribution to wartime maintenance of highway transportation, were outlined before the SAE National Transportation and Maintenance Meeting in Philadelphia recently, by B. E. Sibley, of Continental Oil Co., Ponca City, Oklahoma.

Use of good quality oil, maintenance of normal engine temperatures, application of effective oil-filters and air-cleaners, observance of sane crankcase drain periods, and draining crankcases while the oil is hot, were listed as major factors for controlling sludge formation.

Quoting the results of a survey of 37 commercial motor vehicle fleets operating more than 37,000 vehicles, Mr. Sibley said experience shows that improvements in the way of reduced sludge formation are obtained by using lubricating oils of the detergent type. He warned, however, that the use of such oils is no panacea.

Mr. Sibley recommended that engine design improvements be made to aid in controlling and curtailing sludge formation by facilitating the cleaning of oil passageways and by assuring complete crankcase draining.

●

Cars Still Greatest Transportation System

DESPITE wartime restrictions on motor vehicle use, Americans in 1943 traveled 280,000,000,000 passenger-miles in private automobiles. Passenger-miles traveled on steam railroads last year totaled 87,980,000,000; on buses, 54,864,000,000; on electric railways, 35,400,000,000; and on domestic airlines, 1,606,000,000 passenger-miles.

This compares with an all-time high of 501,000,000,000 passenger-miles traveled in private automobiles in 1941. In that year, steam railroads handled 29,435,000,000 passenger-miles of travel; buses, 25,651,000,000; electric railways, 27,600,000,000, and domestic airlines, 1,370,000,000 passenger-miles. In both years, passenger-miles traveled on Pullman cars are included in the figures for steam railroads.

In 1943, steam railroads handled 730,500,000,000 ton-miles of revenue freight; trucks transported 46,100,000,000 (preliminary figure); Great Lakes transportation, 111,604,000,000; inland waterways, 27,620,000,000 ton-miles of freight.

This compares with 1941 ton-miles of freight by steam railroads totaling 477,500,000,000; by truck

YOUR BUSINESS IS AT *Stake!*

EVERY time one of your trucks goes to the junk heap and can't be replaced, it makes a nick in your business. Remember—the stockpile of trucks is fast dwindling down to nothing. This is why you should balance the wheels of every truck in your fleet. Wheel balancing reduces vibration and conserves mechanical parts. It will definitely make your trucks last longer.

SEND for wall chart showing the pounding effect of unbalanced wheels.

L&H

HARLEY C. LONEY CO.
16873 Wyoming DETROIT 21, MICH.

Wheel Balancing Weights

44,227,000,000; and by pipe-lines, 62,702,000,000. Great Lakes and inland waterway figures are not available for that year.

The above passenger and freight mileage data was compiled by H. E. Hale, publisher of Hale's Transportation Charts, from such sources as the Bureau of Railway Economics, the Automobile Manufacturers Association, the New York State Motor Truck Association, the Chief of Engineers, U. S. Army, and the American Petroleum Institute.

•

Highway Livestock Movement Jumps

RECEIPT of livestock by highway at principal markets increased 6,931,427 head, or 31 percent, during the first six months of this year as compared with the same period of 1943. Highway movement of livestock to these markets during the first half of 1944 totaled 29,482,487 head.

Last year the movement during the same period was 22,551,060 head. Total shipments of livestock by highway and rail to principal markets for the first half of this year totaled 49,820,460 head, compared with 39,686,935 in the first six months of 1943.

In the first two quarters of last year motor vehicles handled 56.8 percent of the livestock shipped to principal markets, while this year for the same period the amount transported by highway was 59.2 percent of the total receipts.

•

Three Federal Transport Agencies Proposed

RECOMMENDATIONS made last May by the Board of Investigation and Research are incorporated in S. 2085, by Senator Hill, (D., Ala.) which would establish:

1. Through routes and rates by highway, rail, water and require all rates to be free from "discriminations."

2. A permanent three-member Federal Transportation Authority to conduct transportation studies, planning and research.

3. An Office of Public Transportation Council to be lodged in the Department of Justice.

4. A National Transportation Advisory Committee to be composed of representatives of government, transportation, labor, finance, agriculture, industry and other groups interested in transportation.

Members of the Federal Transportation Authority each would receive $10,000 annually and a secretary would be employed at $7,500 per year, a general counsel at $9,000 per year and the necessary staff.

On trucks which still rely on original equipment for motor temperature control, Dole Replacement Thermostats will lengthen rationed miles through economy of gas and oil. Another cause of engine wear will be minimized.

DOLE *Replacement* THERMOSTATS

THE DOLE VALVE COMPANY
1901-41 Carroll Avenue, Chicago 12, Illinois
Representatives in Principal Cities

☆ For the past 30 years it has been our policy to give our customers prompt service. We have always striven to maintain this excellent record. Because of this we regret very much that we are unable, at the present time, to supply the demand for "KING" Testing Equipment. We operate under a WPB quota which enables us to make 100% of our 1941 volume of certain items while other items are frozen for civilian use. Dealers buy from "KING" Jobbers without priorities — Jobbers buy from us, within our quota limits, on WPB form 547 or PD1A.

"KING" MT-695

Ask Your Jobber or Write Us

The ELECTRIC HEAT CONTROL Co.
9129 INMAN AVENUE • CLEVELAND 5, OHIO
GOOD "KING" PRODUCTS SINCE 1914

WORN, burned and discarded exhaust valves are easily salvaged with Stoody 6. Just weld this alloy on to valve faces with your oxy-acetylene outfit, rough turn and finish grind. Works equally well on new valves or old, eliminates shortage worries, *gives 300% to 400% more life than ordinary valves!* Simple, economical. Write for folder "Weld New Life Onto Worn Valves With STOODY 6"—no obligation!

STOODY COMPANY
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STOODY HARD-FACING ALLOYS
Retard wear... Save Repair

FITZGERALD

GASKETS
GREASE RETAINERS
OIL SEALS
GASKET PACKING MATERIALS

Gasket Craftsmen Since 1906

• FITZGERALD BULLDOG, METAL-FLEX GASKETS FOR HEAVY-DUTY WORK—LAST LONGER—REDUCE OPERATING COSTS

Order Through Your Nearest FITZGERALD Jobber, or write us for complete information.

The FITZGERALD MANUFACTURING CO.
TORRINGTON, CONN.

Branches: Los Angeles and Chicago;
Canadian FITZGERALD, Limited, Toronto

FITZGERALD GASKETS
THE COMPLETE LINE THAT COMPLETELY SATISFIES

Trucks Deliver British Meat Unfailingly

IN spite of British war-time highway transportation difficulties, it is reported that not once since 1939 has a London retail meat dealer failed to receive his weekly supplies—London consumes an average of 5,000 tons of meat every week.

In recent months long-distance movements of meat by highway in England have been in greater volume and in mileage than at any time since the war began.

Weekly long-distance loadings rose 60 to 80 percent in a recent six-months' period. Deliveries to U. S. armed forces in recent months have run into thousands of tons, necessitating unusually long and awkward cross-country journeys.

In twelve months the turn-around time of British motor vehicles unloading meats from convoys has been reduced 15 percent, enabling highway transportation to move thousands of additional tons each week. This intensification of operation was reflected in increased mileage covered and has enabled adherence to the rule "delivery the day after loading."

•

Uncle Sam Remembers That Use Tax

UNCLE SAM hasn't forgotten about that $5 "use" tax stamp which should have been purchased by July 1. . . . In recent weeks thousands of car owners of the Nation have been stopped on the streets or summoned by the Internal Revenue Department to explain the absence of a "use" stamp on their cars, and have been compelled to buy stamps at the full $5 rate, unless they were able to prove loss or theft of stamps previously purchased.

•

"Margin for Safety" (For Drivers)

THE driver of a tractor-trailer unit heavily loaded with vital war material, had been informed of the importance of the load and that it was to reach its destination as soon as possible. Intent upon his mission, he did not slow down or stop to change into a lower gear before descending a steep grade, but took a chance that the brakes would be sufficient to keep the vehicle under control.

However, after the truck had traveled down the hill for a short distance, with the brakes on continuously, the brake linings ignited and soon were burned so badly that the brakes became ineffective. Although the driver no longer could check the speed of the ve-

WRITE FOR BULLETIN KU-50 on
WAGNER Air Brakes
THE AIR BRAKE WITH THE ROTARY COMPRESSOR
Wagner Electric Corporation
6 Plymouth Avenue, St. Louis 14, Mo., U.S.A.

hicle, he remained in his seat and succeeded in guiding the truck until it came to a slight curve near the bottom of the hill, where it ran off the highway and turned over. The driver was fatally injured, the truck was damaged beyond repair, and a large amount of the war material was lost.

No margin for safety! A few seconds' delay at the top of the hill to change to a lower gear would have prevented this accident.

A good rule to follow in going down a hill is to use the same gear that would be required to ascend it.—*Suggested by Travelers Insurance Co.*

●

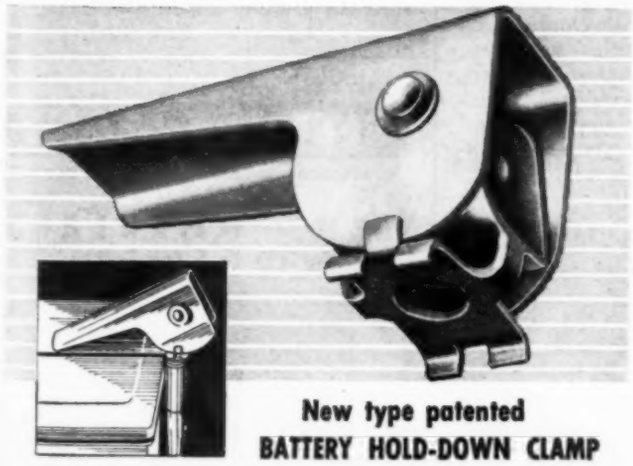
Plan for Disposing of Surplus Vehicles

ALTHOUGH the public hasn't heard a great deal about it, disposal of surplus motor vehicles by the U. S. Government has been going on for some time.

Under current procedures, when an agency declares motor vehicles surplus, the Procurement Division of the Treasury takes over the stock and offers it first to other Government agencies. Vehicles not absorbed by these agencies are offered for sale to established commercial vehicle dealers, who, in turn, may sell them to essential users under prevailing Government regulations.

Latest available figures show that 26,515 motor trucks of all kinds have been declared surplus. Of these, 2,969 went to other Government departments and 17,283 have been sold to dealers, leaving 6,263 vehicles available for disposal. These figures include junked vehicles. All passenger automobiles declared surplus by Government agencies have been absorbed by other departments.

SPEEDS BATTERY SERVICING



New type patented
BATTERY HOLD-DOWN CLAMP

Replaces wing nuts, safety wiring, etc., greatly speeding battery removal. The positive locking Cam action will withstand severe vibration, but is easily released manually. Full ARMY and NAVY approval has been obtained. Standard sizes immediately available are:

Part No.	Nut Size
5022 - 1	3/16 - 10 - 32
5022 - 2	1/4 - 20
5022 - 3	1/4 - 28
5022 - 4	5/16 - 24
5022 - 5	3/8 - 24

Samples upon request

THE PAUL HENRY COMPANY
2037 SO. LA CIENEGA BLVD. • LOS ANGELES, CALIFORNIA

Easy
RECIPROCATING
ELECTRIC SANDER

Slow hand sanding wastes your painter's valuable time. With the EASY Sander on the job, even inexperienced boys turn out more and better work than two or three hand operators.
The fast, straight-line, reciprocating action of the "EASY" duplicates the back-and-forth motion of hand block sanding. It is known in most shops as "The Electric Feather-Edger".

FOR SANDING
•
FEATHER-EDGING
•
SMOOTHING SOLDER
•
RUBBING

DETROIT SURFACING MACHINE CO.

COLE-HERSEE COMPANY • BOSTON 27, MASS.

30 YEARS OF SERVICE

Quality
ELECTRICAL
AUTOMOTIVE
and
AVIATION
EQUIPMENT
When the guns started shooting over there, Cole-Hersee's organization answered the call and still made shipments for replacements.
The Military Forces still need Cole-Hersee Products and yet we continue to serve you to the best of our ability.
We are proud of our 30 years service to our customers and country.
When the shooting stops over there — Be prepared over here—
Remember Cole-Hersee

WE ARE PROUD OF OUR 75 STAR FLAG

Cole-Hersee Company
54 OLD COLONY AVE. BOSTON 27, MASS

Super Penn-Drake Motor Oils

Before Pearl Harbor—100,000 miles was "trade-in" time for most motors.

Now look at your mileage. Super Penn-Drake Motor Oils help keep these motors dependably and economically humming along, because of the stamina and full-bodied qualities found only in Pennsylvania Crudes—the world's finest crudes.

You can still get these advantages to help your "war tired" motors over the hump—write for Bulletin No. PR 101.

For Victory in '44—Work Harder—Invest More in War Bonds.

PENNSYLVANIA REFINING COMPANY
General Offices: BUTLER, PA.
Refineries at KARNS CITY and TITUSVILLE, PA.

Makers of White Oils (U. S. P. and Technical); Petrolatums (all grades and colors); INSECTI-SOL (deodorized Insecticide base); Odor-Free and other Naphthas; Petroleum Sulphonates; Waxes; Industrial and Motor Lubricants and Greases; Fuel Oils, and other petroleum products.

Course for Motor Vehicle Supervisors in Atlanta This Month

A SHORT course for motor vehicle fleet supervisors will be held October 23-27 at the Georgia School of Technology, Atlanta, Ga., to be known as the Southeastern Motor Vehicle Fleet Supervisors Training Course. It will offer specialized studies in the fundamentals of selecting, training and supervising drivers for safety, efficiency and conservation.

Course director will be Paul H. Coburn, fleet safety engineer of the National Safety Council. Other instructors will include Prof. Amos E. Neyhart, of the Institute of Public Safety, Pennsylvania State College; Milton D. Kramer, of the Center for Safety Education, New York University; Prof. R. L. Allen of Georgia Tech and leading fleet safety directors and transportation officials.

Enrollment will be open to fleet owners and operators, safety and personnel directors, fleet supervisors and safety engineers, chief mechanics, transportation officials and others directly connected with safety and conservation in the motor transportation industry. Certificates will be issued to those who fulfill course requirements.

The course will cover the basic elements of a well-balanced accident-prevention and conservation program in wartime and will show how these techniques can be projected into the post-war period. Subjects will include the new techniques of driver selection, methods for testing and improving driving skill, developing and sustaining safe driving attitudes, driver-mechanic cooperation, the effect of accurate accident reporting and analysis on the safety program, and the effect of accident prevention on the progress of the industry.

●

Big Surprise to Enemy in France

A NEW combat vehicle which has made its appearance on the battlefields in Normandy, is the airborne tank carried by gliders to places which would ordinarily be inaccessible to tanks. The element of surprise gained by the appearance of a tank instead of troops when a glider lands, has already had its effect on the successes of the invasion of Hitler's fortress in the west.

The new tank is familiarly known to troops as the "Locust" as a result of initial action scenes of huge gliders landing in battle zones disgorging tanks, which immediately blast positions where Nazis have been waiting to fire on advancing Allied soldiers.

Designed especially for airborne use, the tanks were produced from specifications furnished by the Ordnance Department to the Marmon-Herrington Company, Indianapolis, Indiana.

Damaged "Beyond Repair", Tractor is Restored to Service

A GOOD example of skillful rebuilding is found in the restoration of a wrecked Central Transport fuel truck by the Peterson Sales Company of Shreveport, La., White sales and service organization.

The truck had jumped the road and landed 30 feet below, with the trailer and its 5,000 gallons of gasoline piling up on the tractor. So severe were the impacts that the unit was all but flattened. Despite the extensive damage the truck was restored to normal use in a period of 25 days. In normal times it might have been junked.

To put the vehicle back into shape it was necessary to replace the cab, cowl hood, radiator, shell grille, clutch housing, and many working parts. The tandem axle had to be rebuilt, the skirting of the trailer restored, the wiring redone, and the entire job repainted and relettered. Modern repairing and rebuilding facilities in the shop of the Peterson Sales Company made the transformation possible.

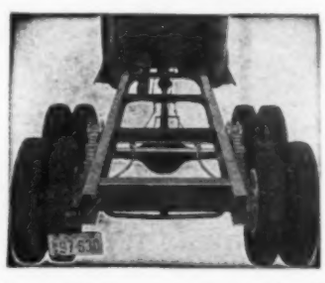
●

Super-Vehicles Aid War Production

THE automotive industry has designed super freight-carrying vehicles for specialized operations on America's wartime home front. . . . Fully loaded, they weigh from two to three times as much as General Sherman tanks and are taking an important part in the Nation's war production program by transporting basic raw materials from open-pit mines to refining plants, steamship docks and railroad freight terminals.

LITTLE GIANT
AUTOMOTIVE TRUCK EQUIPMENT

TEN WHEELERS
for 1½ to 5 Ton Trucks



Greater tonnage . . . more profit. Increase carrying capacity up to 20 tons. Extend frame to any desired length. Load kept in perfect balance . . . no teeter or end-sway. Simple, sturdy, no intricate parts. Timken bearings; steel castings hydraulic brakes. Easily installed in 3 hours. 3 sizes. *LOW COST. No priority rating required.*

Also makers Little Giant Frame Extensions, Hand Hoists, Wrecking Cranes.

Write for Circulars, Low Prices

LITTLE GIANT PRODUCTS, INC.
1535 No. Adams Peoria, Illinois

American Drivers Earn Praise in France

IN THE Battle of France, American motor vehicle drivers "carved a well-earned place for themselves in the invasion, the greatest transportation maneuver in all military history," in the words of Major-General Frank S. Ross, United States Chief of Transportation in the European Theater of Operations.

The "traffic manager" for the invasion declared that "without truck convoys speeding by day and night to points of embarkation, we could not have been ready on time."

Transportation Corps truck companies on both sides of the Channel worked night and day without relief. One company alone traveled 225,000 truck-miles between D-Day and the end of June.

On "D plus 2 days" a truck company in Normandy was attacked by a Nazi plane. As a man, the company began firing rifles and carbines, and ship guns blazed away from the harbor. The truckers saw the plane spin into the sea in flames and now claim to be the first truck company with a Jerry to its credit.

●

Trucks Do Big Job in Mines and Quarries

ONE of the most important war jobs being performed by highway transportation is the movement of products of mines and quarries to processing plants or railroad connections.

One example of the importance of highway transportation to mining operations is found in Nevada, where trucks and trailers are making round trips of 668 miles every 24 hours, carrying magnesium oxide from the mine and ore-reduction plant at Gabbs, Nevada, to the company's metal plant at Las Vegas. The nearest rail line to the mine is 32 miles away and the rail route from that possible shipping point is extremely circuitous, involving a total haul of 1,116 miles.

There are 22 two-trailer units in this fleet with a Diesel tractor and two semi-trailers empty weighing 45,020 pounds. They are loaded to a gross weight of 105,020 pounds with a maximum axle load of 18,000 pounds.

Under peace-time conditions these combination units could make the round trip between Gabbs and Las Vegas in 20 hours, but war-time restrictions lengthen this to 24 hours. The route traveled has grades ranging up to seven percent and elevations above sea-level range from 1,800 to 6,300 feet. Temperatures in the desert and mountain country range from below zero in winter to 120 degrees in summer.

VELLUMOID
Saves Repairs

VELLUMOID Gaskets are tough and dependable. They are built for long hard service . . . the standard for 30 years.

THE VELLUMOID CO.,
WORCESTER, MASS.

FOR SAFETY LIGHTING AND EQUIPMENT

It's DO-RAY ALL THE WAY

★
DO-RAY CERTIFIED Products pass specifications of S. A. E. and I. E. S. meeting all I. C. C. requirements.
★

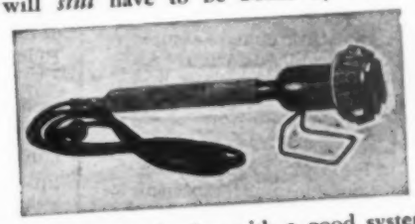
No. 70
GIANT-LITE
Ideal for trucks with rear doors extending full height of body. Angle bracket permits 4 mounting positions.

No. 1292
KNOBBY REFLEX
For trucks, busses or trailers—designed and constructed to withstand the severest abuse. White, amber, red or green.

DO-RAY LAMP COMPANY
1458 S. MICHIGAN AVENUE · CHICAGO
SAFETY LIGHTING AND REFLECTING EQUIPMENT

Truck Tires Still Tight!

COL. Dewey's *optimistic* announcement on the outlook for heavy truck tires was immediately followed by Col. Johnson's *pessimistic* report that the tire shortage would spread to *small* sizes, too. . . . This lack of agreement among government officials indicates that the burden of tire conservation will *still* have to be borne by fleet men.



TIRE conservation begins with a good system of record-keeping and includes the *branding* of each tire. . . . It's *not too late* to start. . . . Everhot Branders (*shown above*) are available for immediate shipment and we still have a supply of Everhot Tire Record System index cards. . . . Begin today to know *exactly* where you stand on tires.

Everhot is now devoting its efforts to helping fleet operators keep all tires rolling. . . . A penny post-card will bring the complete story, as well as free sample tire record cards

Everhot MFG. COMPANY
MAYWOOD, ILL.

VULCANIZES 7-INCH TEARS IN SYNTHETIC TRUCK TUBES

Eeco's revolutionary new electric heavy duty vulcanizer quickly repairs tears in synthetic truck and passenger car tubes up to 7 inches—or your money back!

★

Actually vulcanizes . . . provides proper heat and pressure so essential for good vulcanization of synthetic truck tubes. Also ideal for natural rubber tube vulcanization. No priority needed.

★

Eeco's new vulcanizer also repairs rubber valve stems, cures full splice—cures both outside and inside reenforced repairs as well.

★

Electric thermostatic control assures perfect pressure vulcanization. All electrical parts guaranteed for life!

★

Simple to operate—outfit pays for itself in less than 25 jobs. Continuous supply of repair materials assured.

★

Fleet owners say Eeco's new vulcanizer is perfect solution to synthetic tube repair headaches. So take advantage of our special 7-day trial offer which entitles you to return vulcanizer if not completely satisfactory.

★

Act now! We will ship C.O.D.—or send cash, check or money order for **$34.50** TO

EQUIPMENT ENGINEERING COMPANY
5 BLOOMSBURY AVE. ★ CATONSVILLE, MD.

Eeco Products

GAS, FUEL OIL PRICES CUT

● OPA recently has reduced ceiling prices at all levels of distribution for gasoline, kerosene, distillate fuel-oils and residual fuel-oils in parts of the Atlantic Seaboard area. . . . The reductions only amount to very small fractions of one cent per gallon, however, so don't become unduly excited.

●

"R" GOOD AT GAS PUMPS

● All gasoline filling stations may again accept off-highway "R" coupons, OPA recently announced. . . . The prohibition against acceptance of these coupons at most filling stations has been in effect since April 1, 1944. . . . Its purpose was to limit channels of "R" coupons, to reduce their illegal use.

●

RAYON IN TRUCK TIRES

● Rayon cord is now being used in all 7.00-20 (32x6) 10-ply and 7.50-20 (34x7) 10-ply truck tires. . . . This is in addition to the larger sizes of truck tires in which rayon has been used for several months past.

●

MORE LABOR FOR TIRES?

● The special drive to recruit labor for manufacturing heavy-duty tires succeeded during August in meeting two-thirds of the tire industry's manpower needs, and will probably complete the job this month, WMC recently stated.

●

OPA APPOINTMENT

● The appointment of Maxwell L. McCullough of Dallas, Texas, as deputy administrator for rationing of OPA was announced recently by Price Administrator Bowles. . . . He will succeed Charles F. Phillips, who assumed the presidency of Bates College, Lewiston, Me. . . . He served continuously as regional OPA administrator in Dallas since January, 1942.

●

MORE JOINT-ACTION PLANS

● More than 20 motor carriers operating in the midwest region have entered into new and approved conservation and joint-action plan agreements, ODT said last month. . . . In one plan, seeking to save 41,900 truck-miles and 5,200 man-hours annually, in the Knoxville, Tenn., area, ten carriers have agreed to eliminate partly-loaded trips and to divert freight to each other. . . . Another plan involves ten carriers and a saving of 18,980 truck-miles annually between Chicago and Ft. Wayne.

"PRESSURELUBE" GREASING UNIT

● The Only Completely-Portable, Self-Contained, Battery-Operated Grease-Gun Equipment

EXCLUSIVE FEATURES:

1. **Self-Powered**—Either with battery or gasoline engine, eliminating the need for air-hose or electric cord.

2. **Grease Pressure**—Adjustable from 1,000 to 12,000 lbs. per sq. inch.

3. **All-Purpose**—Will dispense all lubricants, from the lightest to the heaviest, even in sub-zero weather.

4. **Portability**—Allows the gun to be wheeled directly to the vehicle to be lubricated, without removing the load.

IF you now possess a pre-war PRESSURELUBE outfit, we are here to help you keep it running, with a full stock of service parts for all models. . . . We are also prepared to handle repairs—from light service to complete reconditioning, at our modern factory.

Write for Latest Catalog

PRESSURELUBE, INC.
609 W. 134th ST., NEW YORK 31, N. Y.

Guard Against Corrosion Caused by Salt on Highways

THE small amount of brine that splashes onto motor vehicles can easily be washed off the running gear and fenders, it is pointed out by engineers of salt companies.

Investigation is said to have revealed that any such corrosion is negligible where it exists at all, because the brine is weak and because very little of it reaches exposed metal parts.

But, to be on the safe side, frequent washing of the under-carriage is recommended during the snowy months.

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Steel-faced Plywood Panels
- Tremendous Strength
- Extreme Light Weight
- Easy to Fabricate
- Eliminate Drumming
- Reduce Framing

CHECK THE ROAD-PROVED ADVANTAGES OF
★ HASKELITE ★
FOR BODY, ROOF, DOOR, PANEL AND FLOOR CONSTRUCTION
HASKELITE MANUFACTURING CORPORATION, Grand Rapids, Michigan

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HEAVY DUTY
ELECTRIC DRILLS

Streamlined with a purpose. They're redesigned — shorter, more compact — for greater efficiency, better balance, easier handling and greater convenience in close quarters. All the tried and proven SIOUX developments that have made them outstanding for their endurance, have been retained. SIOUX Heavy Duty Drills include sizes and capacities to meet all needs. For the most efficient and economical method of handling any drill job, you need SIOUX Drills.

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STANDARD THE WORLD OVER

GENUINE ALMETAL PRODUCTS

MR. TRUCK OWNER:

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THE ALMETAL UNIVERSAL JOINT CO.
1555 EAST 55th STREET · CLEVELAND 3, OHIO

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★ Football is still a matter of touchdowns—but time has developed a more skillful game with many technical improvements.

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With the addition of *thirty percent more rolls*, Tyson has almost doubled ordinary roller bearing life. Size for size, the Tyson "All-Rolls" bearing has greater load capacity—more strength and rigidity. It's a heavy-duty bearing for heavy-duty jobs.

The big name in bearings today is . . . **TYSON!**

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COUNT THE ROLLS · THE ROLLS COUNT

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TODAY'S HEAVY-DUTY BEARING

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. . in every cylinder condition

Steel-Vent is different—because it employs the *soft pressure* principle.

Millions of Steel-Vent installations have confirmed the basic soundness of the soft pressure principle in *every* cylinder condition.

Soft pressure stops oil-pumping and checks cylinder wear—in rebores and resleeves as well as in extreme tapers.

Soft Pressure does it—in Rebores, too

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To service every engine in your fleet most efficiently requires 26 BASIC DESIGNS
To enable you to provide the best possible rings for every engine in your fleet, Sealed Power engineers have developed 26 basic designs for use in Individually Engineered Ring Sets. Each set contains rings specifically engineered for a particular type and make of engine. Sealed Power has been refining these sets over five years —has been producing rings for car, truck and engine manufacturers 33 years. For best results, re-power with Sealed Power motor parts. Sealed Power Corporation, Muskegon, Michigan and Windsor, Ontario.
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BUY MORE WAR BONDS
not 2... not 6... but 26
INDIVIDUALLY
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RING SET
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SEALED POWER PISTON RINGS

BEST IN NEW TRUCKS! BEST IN OLD TRUCKS!